

Bob Cooper's

APRIL 15 2005

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

Reactivating
junk
dishes

Clips versus
chunks for
circular

Confusing
world
of SDT/HDT

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ Dreambox 7020: NDS?
- ✓ Observer Reports

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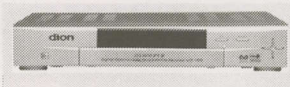
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For all prices, product information and banking details please visit the website or phone us.

Specials this month

DT800PVR - Digital Receiver



- 40Gb HDD = 40hr Record time
 - 2x CI CAM Slots
 - DiSEqC 1.2
 - **Fibre Optic Output Capability**
- Price: \$390 AUD + GST

Satlook - Signal Meter



- Digital, Analogue and combined versions available
 - A must for the professional
 - Simple menus and functions
- Price: Phone up for Quote

DreamMAX - DT470



- Irdeto embedded
 - 4900 Channel Memory
 - DiSEqC 1.2
 - User Friendly
- Price: \$200 AUD + GST

Everything? Yeah we got

LNBF

- Zinwell C Band
- Zinwell KU Band
- MTI C Band, Superhigh gain
- One Cable Solution - CBand
- Dual Output KU 11300 MHz

Positioners

- Superjack EZ-2000
- Superjack DP-6600, DiSEqC 1.0/1.2
- Technosat DP-200, DiSEqC 1.2
- Manual Actuator Driver - EW101
- SAP 2000: 99 Memory positioner

Actuators

- Superjack HARL-3618, 18" Actuator
- Superjack HARL-3624, 24" Actuator
- Superjack DG-120, H/H Mount

Receivers

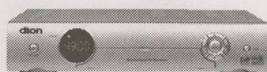
- SuperNET CA, Irdeto Embedded
- Success, Free-to-Air
- Dion DT-370, Free-to-Air Receiver
- Dion 2x CI, Hardware AllCAMed
- ChangHong, Mediaguard embedded
- SuperNET Terrestrial, DVB-T
- Phoenix High Definition STB

Dish and mounts

- 1.2, 1.8m Solid Prime focus
 - 45, 60, 65, 85cm KU dish Offset
 - 2.13m, 2.27m, 2.4m, 3.0m, 3.07m, 3.7m, Mesh Dish, Light and Heavy
- Duty PSI and JOYSAT Available

- CBand Wall brackets
- CBand Concrete mounts and stands
- KU Gutter mounts
- KU Wall mounts
- KU Float mounts
- KU Tinroof mount

Dion 818 CI - Digital Satellite Receiver



- Slim Size and User Friendly OSD
- 2x CI (Common Interface) slots
- Hardware AllCAMed

SuperJack H-H Actuator, DiSEqC embedded



- All it takes is one coaxial cable....
- NO MOTOR CABLE REQUIRED**
- DiSEqC Positioner EMBEDDED!

Supernet - Terrestrial DVB-T



- Digital Terrestrial Receiver
- Slim Design
- High Quality Picture
- Easy to install and use

Dion316 - Digital Satellite Receiver



- FTA + Software Patched
 - 4000 Channel Memory
 - DiSEqC 1.0/1.2 Compatible
- Price: \$170AUD + GST

Switches and Splitters

- 2 and 4 way DiSEqC switches
- 0/22kHz switches
- 2 and 4 way cable splitters
- V/H Multiswitch
- 0/12V Switch

Cable - 15m, 25m, 305m packs

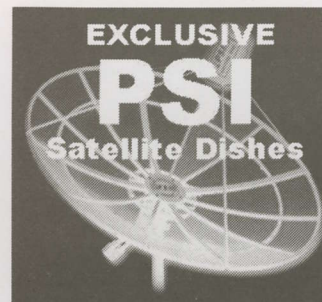
- RG6-U Dual Shield Coaxial Cable
- RG6-U Quad Shield Coaxial Cable
- Cat5 Actuator Cable

Plugs

- F Connectors, Screw or Clamp types
 - Cable joiners
 - AV Splitters
 - Cable Strippers
 - Cable clampers
 - Various other joiners and accessories
- e.g. RCA/SCART cables and converters

Misc

- 2.4GHz AV Sender
- Irdeto 2.06B CAMs, Viaccess CAMs
- Satlook Digital Signal Meter
- Satlook Analogue Signal Meter
- Satlook Digital + Analogue combo
- Satellite finders
- Angle level measure instrument
- High Quality Compasses



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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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our ELEVENTH year!

COOP'S COMMENT

The rush to define how television programming will be distributed to the world continues to be as controversial as the marriage of a certain prince to a certain divorced lady in the UK. Many folks have an opinion about both topics, nobody however seems to have a clear focus on how either event will impact the world of 2010 or 2020. One will be all but forgotten, the other will be a legacy we will have to 'wear' for perhaps 50 years or more.

Digital's theme song in the early days was 'more programme choice, clearer pictures, greater definition on the screen'. More recently, 'interactivity' has joined the parade, based upon the supposition that a world grown up on 'passive involvement' with screen images would somehow jump at the opportunity to become a part of the image by 'responding' to things they see or hear. It is an untested and largely unproved postulation.

France, seldom first except in food and wines, is this year joining the digital terrestrial movement by creating two 8 MHz bandwidth MUXes each containing 8 TV programme channels. Pay-TV in France has been slow to grow, something under 30% now pay to watch dozens or hundreds of channels on offer; the French are simply not as enamoured with their TV as many other countries. So 16 free to air channels, and some experimental interactivity, will soon be available nation-wide from more than two hundred transmitter and translator sites. Learned French research groups are forecasting 16 channel FTA will slowly eat into the already limited take-up of French pay-TV, and perhaps, as the UK 'Freeview' model is demonstrating, given adequate viewing choices FTA, pay-TV *does* slow down, sputter and even go backwards.

A recent US research study found that 76% of all Americans know 'something' about 'digital TV' but approximately half of these (39%) only identify 'digital TV' with the DVD players and DVD software they have embraced as no other new technology ever offered. Perhaps we should be grateful that approximately 4 out of 10 Americans have stopped long enough when racing home with their new DVDs to actually sit down and read the words imprinted on the plastic container of the DVD. It would be difficult to miss the phrase 'digital video' but perhaps remembering what they read is a challenge.

The UK experience loudly reiterates the premise that 'clearer pictures, greater definition on the screen' is a very poor marketing incentive when urging consumers to swap out their analogue kit for digital (well - it is *called* digital!) hardware. People like clear pictures, nice sound but in a UK survey neither appeared in the top five reasons why consumers were purchasing DVB-T 'Freeview' equipment. Australia will shortly embark upon a Parliamentary Enquiry to determine, "Why digital take up has been so slow" (see p. 4, here). Does it take an act of government to verify people respond first to "more" (as in more programming choices) and rarely to "better"? In a country where three all-powerful TV networks dominate viewing, and where digital take-up languishes, is it asking too much to suggest somebody take the time to study why the UK 'Freeview' suddenly took off like a shot and is actually now retarding the growth of pay-TV?

Interactivity. I talk to my television set on occasion, especially when watching Keith Olberman's news on MSNBC. I would scream at my television if I ever watched Fox News - 30 seconds is too long with Bill O'Reilly. But asking me to sit down with my grubby sweating hands, grasping a remote control, and then following a set of layered menu instructions, to trace on my screen how to create Lemon Truffles, for my tea, is a huge leap in faith. The average age of my small cable system's customers is in the low 60s (Mangonui being a retirement area). Nary a day passes when one or more of these fine, average intelligence, folks fails to call me (often at 8 in the evening or later) because they have mistakenly pushed 'menu' or 'recall' on their TV set remote and now cannot see Coronation Street because it is hiding behind a series of printed messages overlaid on the programme video. And TVNZ digital thinks they are going to hand these folks a new remote that allows layered text to appear, on purpose? *Holy smoked salmon, Batman.*



April 15, 2005

In Volume 11 ♦ Number 128

Reactivating large junker dishes: maintaining pointing accuracy -p.6
Circular 'cheat' Clips versus chunks (Bill Hyman) -p. 8
Very confusing world of SDT, HDT (part two) -p. 12
Review: Dreambox 7020 has NDS capabilities -p. 18

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Scratchi (analogue present) -p. 31

-On the cover-

BIG (7m) dish requires BEEFY hardware. Cliff Knight welding elevation support backstay
as reborn dish slowly comes back to a useful device (see p. 6).



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PROGRAMMER PROGRAMMING PROMOTION

UPDATE

APRIL 15, 2005

LBF into Samoa

"To the best of my knowledge, I am (American) Samoa's only subscriber. I bought this French service because there is a dearth of good programming reaching American Samoa, and at the time there was some (not a lot) of quality English language TV there. On my first subscription, they deleted the TCM English option and would give no rebate for the degradation. Recently they deleted Cinema Premiere, which did carry 'some' (not many) English movies. Inasmuch as I only watched the Cinema Premiere and 2 French sport channels, I asked for a 33% rebate but LBF does not have the decency to respond. Cheat and run! Can anyone suggest a solution? The LBF Cartoon Channel has an English option that is up approximately half the day. Euronews has several language options including English but the news stories are very repetitious to the point of being boring. The MCM Channel is around 50% each English and French."

Bill Hyman, PCSTV-11, Pago Pago
720 line HDTV?

"Nice article bringing us up to date on the status of digital TV (SF#127). Would the latest pioneer 50 inch plasma with its HDMI not qualify as pure digital input? Pioneer claims it is digital input and they offer a (companion) DVD player that has a HDMI output. I have seen a Pioneer data sheet claiming a vertical resolution of 720 pixels at progressive scan when their DVD and 50" plasma are connected with a suitable HDMI cable. I have no idea how one gets 720 vertical lines out of a DVD that struggles to create 576 lines, however. And, it would really put the cats among the pigeons if TVNZ adopted MPEG-4. Where do we get decoders capable of MPEG-4? Perhaps the Dreambox 7020?"

Bonner Martin, New Zealand
720 line is EDTV (extended definition) not HDTV; see p. 12 here. 720 lines from 576? Only if you cheat and pretend. The consumers are getting digitised!

Left out? In a number of New Zealand cities (and a few 'towns') government has authorised 'independent' stations (mostly on UHF) which have struggled to eke out a break-even revenue stream against horrendous odds; some for a decade plus. How will they fare as NZ TV grows to digital satellite plus digital terrestrial? Few (probably none) of the 'independents' have the audience or dollars to purchase spectrum space on DVB-T and DVB-S. Some, such as religious broadcaster 'Family TV' (north of Auckland in Orewa and barely reaching into portions of Auckland), have resources available which might make their transition more practical (religious channels have a dollar base, fans of their channel, which others do not have) while others (such as Gisborne or Rotorua) can barely meet their monthly electrical bills. Many, (1) forced to become digital, and, (2) denied the opportunity to reach a broader audience through DVB-S and/or DVB-T, will simply disappear into the ether when all analogue is ordered 'off the air'. The present government in NZ, the one most likely to be charged with the responsibility of revealing the digital transition to the electorate, is faced with how to deal with these folks. Ongoing discussions between TVNZ and these broadcasters have unique-to-each solutions, varying from "you pay us (TVNZ) and we will include you on the satellite MUX", to, "sorry, Charlie - you will be off the air." Naturally, those being told "tough luck" are battling to stay on the air. Government can (and will) blame 'TVNZ policy' for those left abandoned in the transition to digital. In fact, it will be the government, not TVNZ, that is forcing them to 'go dark'.

Australian radio broadcasters are urging government to authorise AM and FM 'digital radio'. A group representing more than 250 radio stations has met with the PM and other appointed plus elected officials. The group wants to be 'simulcasting' digital radio no later than 2007. Radio's concern is that the rapid expansion of broadband delivery of thousands of 'streaming radio services' will cut into their listener bases if they do not have the technical capability to deliver 'CD quality noise free' radio to AM and FM listeners. At least three different approaches to digital AM/FM are in use: UK uses 200 MHz VHF for delivery, some European countries have introduced 1400-1500 MHz terrestrial radio, US (plus Canada, Mexico) is using 'inband' simulcasting which transmits a digital data stream surrounding their normal AM or FM carrier frequency.

ABC2? Not on Aurora channel 21 (in fact not on Aurora at all, at this time). Only FTA spot to find it, for while it lasted, was Optus C1, T1/Lower, 12.288Vt, Sr 28.650 and FEC 1/2 (VPID=1081, A=1082, T=1086). 21, which we erroneously reported in SF#127, is actually their DVB-T 'channel' (as found by most DVB-T set top boxes). *Unfortunately*, on March 23, T1/Lower became conditional access; *good-bye to ABC2*.

Accuracy and Quality

Unaohm measurements are based on sound engineering principles that have been confirmed in some of the foremost engineering laboratories. BER precision is assured as the same BER systems are employed from the top of the line EP3000 all the way down to the new handheld models.

Features include Modulation Error Ratio, Data Logging, Spectrum, Expanded Spectrum and simultaneous views of any seven transponder signal levels.

S20 for Satellite QPSK, T40 for COFDM or C30 for QAM, complete the handheld family. And they all ship with a robust rubber holster and neck strap.

It's nice to save a few dollars, but if that means you buy a less than accurate instrument - is that wise?

Unaohm has almost 70 years of instrument manufacturing experience. Coupled with Laceys.tv factory trained support, your investment is assured.

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Digital and Analogue, Terrestrial, Satellite or Cable.

Is - digital TV 'rather a fraud'?

"Your article on the status of digital TV made interesting reading; as SF basically supports FTA TV it is understandable that may be a bias against pay-TV; nobody could argue against its 'profit motivation'. However, other than ethnic channels and some current affairs, there is not much up there on FTA satellite which would make the public pay big bucks for the antenna and STB. While digital TV is 'rather a fraud', the ability to keep the signal digital is here now and is not sometime away, as you portray. Some screens and DVD recorders have DVI or HDMI inputs which carries the signal digital to digital rather than back to analogue. Toshiba now has a set top box with a hard disk drive capable of playing and recording HDTV; others will follow, soon. Also note that the Toshiba box is A\$1,600 which makes the Foxtel hard drive recorder an excellent value at A\$400. Denon also has a DVD player capable of upscaling DVDs to high definition output using the HDMI input/output. I suspect within 12 months DVI/HDMI will appear on most appliances giving consumers access to direct digital signals. Oh yes, I have no commercial interest in this business - other than being a home cinema enthusiast."

H. Wood, Adelaide, SA

DVI/HDMI is certainly the coming thing but when a consumer purchases a "HDTV ready/capable" receiver/monitor and then must spend an additional A\$800 for the DVI/HDMI capable STB to actually receive HDTV, we have a ways to go before HDTV is affordable and commonplace in Australian (or New Zealand) homes. Our 'bias' is pure and simple - nobody, even in the UK (see story top right) is doing an adequate job of educating the consumers about DVB-T/DTT or its silk hat cousin, HDTV.

This leaves buyers vulnerable to seldom-informed sales people who march to the beat of the "digital is the answer" drummer. We blame the manufacturers, the distributors and the retailers for being less than forthright in their explanations of what digital is - and is not.

DVD is not video!

"Shame - DVD stands for digital versatile disk, not digital video disk. The format from launch was designed to do much more than simply video."

IF, Queensland

Correct, of course. Sometimes our head gets stuck too far into T-vision!

HARDWARE EQUIPMENT PARTS

UPDATE

APRIL 15, 2005

BBC's lack of truthfulness? Study of UK consumer's buying new 'digital' TV sets shows only 1.3% of all sets sold are truthfully 'HDTV ready' although 'more than 50% of plasma, LCD and DLP-rear projection models in marketplace 'claim' this ability. Satellite operator Astra reports 74 models claiming HD are in fact no such thing - all lack DVI or HDMI (High-Definition Multimedia interface) capability. The BBC is being blamed for a lack of consumer education, having to date concentrated merely on 'going digital' without adequately explaining to consumers the many forms of digital participation. A new 'HD Ready' distinctive sticker must, by law, be placed only on DVI/HDMI equipped receivers from 1 April onward. One report noted, "(when consumers discover what they thought was HDTV is not) there may well be a number of dissatisfied customers in the next few months." A forum meeting of broadcasters and equipment manufacturers came to the near unanimous conclusion: "A 42"/1070mm screen is the minimum size for proper appreciation of HDTV." Tell that to the folks buying 21" widescreens for \$699 in Australia!

Australia will conduct a 'federal parliamentary inquiry' to answer the burning question, "*Why are people so slow to take up digital TV?*" Present schedule is to phase out analogue in 2008 towards which the most optimistic projections suggest not more than 50% of Australian homes will own a DVB-T receiver. Reasonably priced receivers with built-in HDTV tuners (and HDTV display capabilities) would appear near the "Top 10 Reasons Why" - with credit to David Letterman.

Fiji's progress. Jonsa 1.2m dishes (both offset and prime focus have been trialled; offset is mostly used however) are working in Fiji proper and (Western) Samoa although as American Samoa reader Bill Hyman reports, "2m are marginal here", which is unexplained given the 100 mile or less distance between the two. The first five Samoan dishes installed went to the New Zealand consular officials stationed in Apia with Australian consulate residences following. And a new potential problem for Fiji. Australia's UNWIRED backers have commissioned a 'scoping study' of the prospects for activating the 3.4-3.6 GHz service there, in Suva and along western shore tourism regions as a start. UNWIRED's local partner in this, if it happens, likely to be radio broadcasting firm 'Communications Fiji'.

Innovia blind search 3800 upgrade. Symptom is no response to remote control, no picture display, menu says "no signal". Cause is failure of C18 (1000uF, 16V) which routinely fails (as in frequently). Solution is to replace C18 with 1000uF, 25V electrolytic (Garry Cratt, Avcomm).

Scratchi? For the record he (or she - we are not disclosing which) is NOT frequent contributor 'IF Queensland' who is concerned that readers might mis-assume he to be (Scratchi).



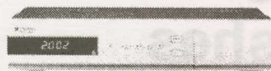
Phoenix Technologies



Satellite Equipment & Accessories One Stop Supermarket

Phoenix JT3100T Digital Terrestrial Receiver

- Digital Audio Output (S/PDIF)
- Dolby Digital
- Wide Screen (16:9) Hot-Key
- S-VHS, CVBS & RGB Video Outputs



- Super-Fast Channel Scan
- Electronic Program Guide
- Channel Rename Function
- Software Upgradeable

\$180/each (for 6 unit)
\$160/each (for 30 units)

Magix 8800 Receiver (Made in Korea)

\$220

Coship digital receiver (Iredto V2.09 CAM embedded)

\$220

SPACE 5300A CI Receiver (Two Common Interface Slots)

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output

\$180



CDVB5300A

SPACE 2300 digital receiver

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output

\$140

NextWave 3220 FTA digital receiver (Made in Korea)

C & Ku band input, PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs

\$160

NextWave 3220C digital receiver (Two common interface slots) (Made in Korea)

C & Ku band input
High symbol rate >45,000
PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs

\$220

Irdeto 2.06B CAM	\$140	Zinwell C band LNBF	\$35
Viaccess CAM	\$140	Zinwell 10.70/11.3	\$25
65cm offset dish	\$27	/Universal Ku band LNBF	
75cm offset dish	\$40	MTI C band LNBF	\$35
Superjack DiSEqC 1.2 motor	\$95	One cable solution C-band LNBF	\$50
Universal Mount	\$15	Satellite finder	\$30
2.1m mesh dish	\$120	Silver Card (10/bag)	\$125
2.3m mesh dish (motorized)	\$170	Gold Card (10/bag)	\$85
2.4m heavy duty mesh dish (motorized)	\$210	RG6 Stripper	\$20
1.8m 6 panel dish	\$130	RG6/11 Crimper	\$30
RG 6 Dual cable (305m/roll)	\$75	Angle meter (made in USA)	\$85
		Compass	\$30

Optus C1 Aurora Kit Coship digital receiver

(Iredto cam embedded)
11.3 GHz/Universal Ku
LNBF, 75cm dish, Mount
bracket.

\$315/set

+Aurora card \$75

LBC, ART, Al Jazeera Kit Coship digital receiver

(Iredto cam embedded)
C-band LNBF, 2.3m
Mesh dish.

\$435/set

+Subscription fee
\$20/month*

Free to air kit (for NSS 6, Optus B3)

Including dish, LNBF,
digital receiver, etc.

**Start from
\$250/set**



Changhong 1000 Digital Receiver Aston 1.05 Cam embedded

Best Value For Indian & French
(C-band on Asiasat 3s & Ku
band on Intelsat 701)
C & Ku band input, 2000
Channels.

\$170

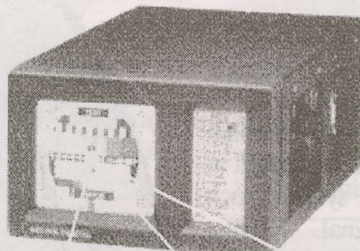
(Top quality) TESTING EQUIPMENT SPECIAL (made in Sweden)

Satlook MARK III \$950

- 4.5" B/W monitor for PAL/NTSC/SECAM
- Satellite-receiver 920-2150 MHz
- Tunable sound 5.5-8.5 MHz
- Spectrum analyzer
- Expanded spectrum
- LNB voltage 13/18 V
- 22 kHz tone switch
- KU- and C-band (normal/inverted video)
- Built in rechargeable battery
- Only 3.5 kg complete with carrying-case

Satlook Digital NIT \$1550

We are pleased to introduce our new SATLOOK Digital NIT. NIT stands for NETWORK INFORMATION TABLE, which today almost all DVB-satellites transmit as standard. The NIT contains information about the Satellite and TV/Radio-channels. It's very easy to identify a Satellite when reading out this information. The different TV/Radio-channels on a transponder can also be read-out.



Satlook COMBO \$2550

- Input frequency: 2-900 MHz and 920-2150 MHz
- 4.5" B/W Monitor for PAL/NTSC/SECAM
- Lots of memory positions for spectrum pictures
- RS232 for PC-connection
- Built in, rechargeable battery. Only 7kg complete with carrying case
- TV-PART**
 - 2-900 MHz spectrum analyzer
 - Presents full range spectrum (and expanded)
 - Very high accuracy, ± 1 dB (at 20°C)
- SAT-part**
 - 920-2150MHz spectrum analyzer. Digital BER, QPSK and S/N-ratio
 - Satellite-ID and TV/Radio-channel info (NIT)
 - Tunable audio bandwidth 5.5-8.5MHz
 - LNB voltage 13/18V, 22kHz tone switch
 - DiSEqC according to level 1.0, 1.1, 1.2
 - KU- and C-band (normal/inverted video)

Full range of C/Ku band satellite dish - panel & mesh, prime & offset, from 45cm to 4.5m

Full range of Zinwell, MTI C/Ku LNBF - Dual output, one cable solution, C/Ku combination

Full range of actuator - From 12" light to 36" heavy duty

DiSEqC 1.2 Positioner & SupperJack EZ2000 Positioner

2.4 GHz AV sender and Remote extender

RG6 Cable and Motor cable

Full range of satellite accessories



THIS MONTH SPECIAL



SPACE 2300A FTA Digital Receiver \$1300/(10 units)

Magix 8800 Digital Receiver \$1200/(6 units)

Phoenix 2.3m Mesh dish \$1650/(pallet of 10 sets)

Zinwell LNBF 15K C-band LNBF \$648/(box of 24 units)

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Big dishes can be BIG problems!

Reactivating 7m "junker" dishes

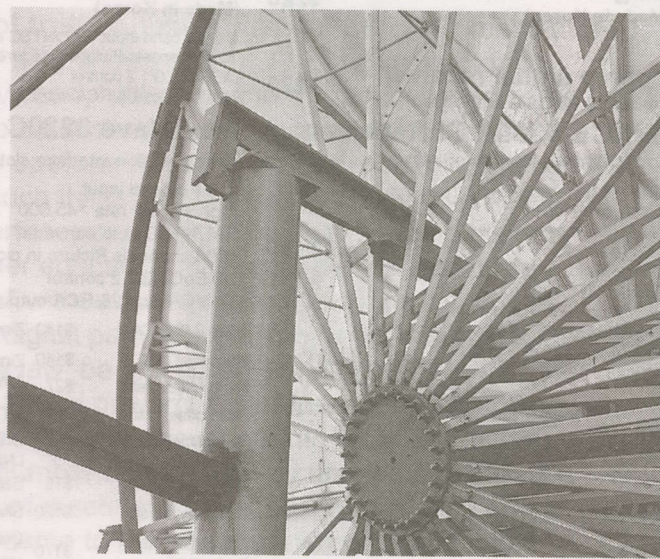
Motueka manufactured 7m region prime focus parabolic reflectors were well known for their brute strength approach to longevity (SF#126, p. 6). But they were not designed for frequent (or occasional) 'sky-scanning'. The designers created large surface dishes with reasonably good structural accuracy on the theory that once you found a particular satellite (not an easy chore with a narrow focus beam 7m region dish, even at C band), you would then proceed to 'lock the dish down' using outrigger supports constructed from telescoping steel pipe (one slides inside the other and the two are held in place with two or more 'locking bolts').

Unfortunately, before you can go hunting for a satellite the outriggers must be loosened leaving the dish supported by a top-of-support pole steel girder held in place with a 12-15mm diameter steel bolt which in fact holds the full weight of the dish. Naturally the one-ton-plus dead weight of the dish plus gravity adds up to the dish wanting to 'fall down' until it either runs into a support member or the ground, essentially pointing straight at the far horizon (0 degree elevation angle). You won't find many satellites at zero degrees. Therefore, before you can go signal-hunting, something must be done to allow you to adjust the elevation and lock it at the appropriate point. This then allows you to rotate the full dish on the square-tube steel mount that supports the round-tube rotational segment.

With an elevation control system, step one is to set the elevation (using the rear of dish steel strut support plate as a measurement point, with an inclinometer); step two once the elevation is set is to loosen the (4) set-bolts on the rotational top support and very gingerly (as in slowly) rotate the dish at the preset elevation until your signal indicator system (such as a spectrum analyser) indicates satellite signal. At that point the azimuth rotational bolts are tightened, working back and forth bolt to bolt so that they all 'go in' at approximately the same rate (tightening one up fully and then the rest causes the vertical support rotational pipe [E' in diagram] to shift a few tenths of a degree from straight up and down, changing the 'as peaked' azimuth on the dish slightly).

A 7m size dish is unlike any 2-3 and even 4m you ever installed.; beamwidth is the critical component. For reference, half power (-3 dB) 'beamwidth' with a 7.2m dish at 3950 MHz is under 0.8 degrees. That means - when the dish is pointing 'off' the satellite by 0.8 degrees, the signal received will be minus 3 dB from the spot-on heading. A 3m dish? 1.8 degrees at 3 dB points, making the 7.2m antenna 225% as 'sensitive' to mis-alignment as a 3m.

Why is this worth noting? Dish mechanics. When a 7.2m dish is 'signal searching', the increments of movement (elevation and azimuth) must be very (verrry) small or as the dish moves through a satellite location, you won't even see it (passing through the satellite location so rapidly that it will fail to register even as a blip on a spectrum analyser). Ideally, the elevation and azimuth movement would be motor driven at a slow rate (such as 1/10th degree per second), and



Above - entire weight (gravity) of dish rests on 1/2" + bolt supporting at end of re-enforced bar. Below - elevation adjustment is threaded rod (angled, centre).



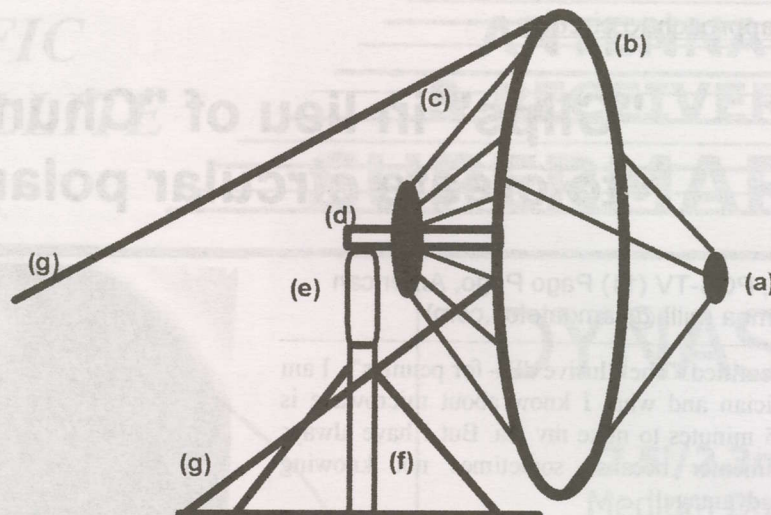
large commercial dishes typically have a two-speed control - one for signal searching (slow) and one for satellite changing (faster) once the satellite locations in elevation and azimuth have been 'logged in memory' by the controller system.

In the system shown here, no motors and Rube-Goldberg to an extreme, the elevation is adjusted with a pair of nuts on a threaded rod while the azimuth is adjusted by pushing and tugging on the dish to nudge it around at as-slow-a-rate as the human movers are capable of doing.

Once the satellite is found, there is another element to the dish mechanics that becomes equally important; the structural stability of the dish mounting system. A 23.5 foot monster dish is inherently unstable, it wants to move ('gyrate') even in modest winds. The movement may seem 'small' to you, but

Anatomy of Big Dishes

- (a) feed 'scalar ring' adjustable; equidistant from all points on dish (b).
- (b) dish surface aligns rim to rim
- (c) dish supports rigid
- (d) dish support strong to support dead weight of dish
- (e) azimuth rotating (horizon scan) system smooth
- (f) dish support system rigid, non-flexing
- (g) dish supports rigid against wind loading



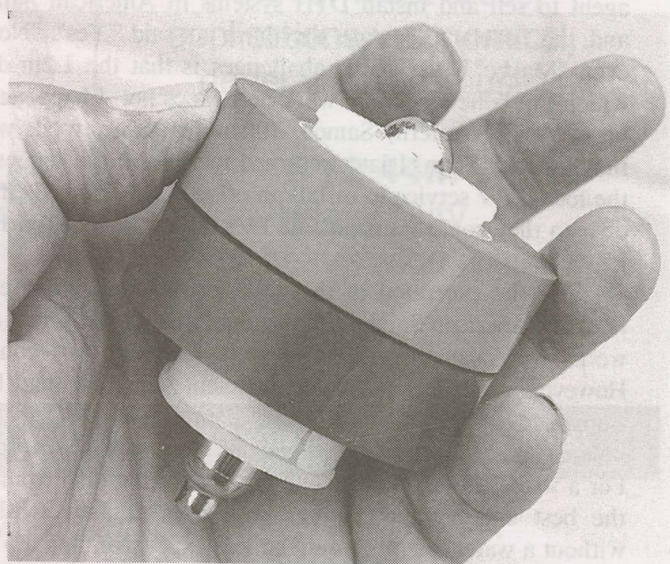
remember, a 0.8 degree shift in dish pointing costs 3 dB in signal level, assuming you were in fact peaked on the signal to begin with!

As dish surfaces grow larger, the gain increases but only if there is careful optimising of the focal point. Ideally, the dish feed 'sees' only the dish surface because that is where the captured and reflected signal originates. The dish as 'seen' from the feed requires knowledge of the dish f/D (focal length to diameter - a ratio) and the feed's 'field of vision'. Most feeds, with an adjustable scalar ring (the outer piece fitting on the waveguide feed proper), have an adjustable position - in and out reference the front tip of the feed waveguide tube. Setting this scalar ring position is important for matching the feed to the dish, to optimise that the feed sees only the dish surface and does not leave any segments (such as the outer edges) 'unseen'.

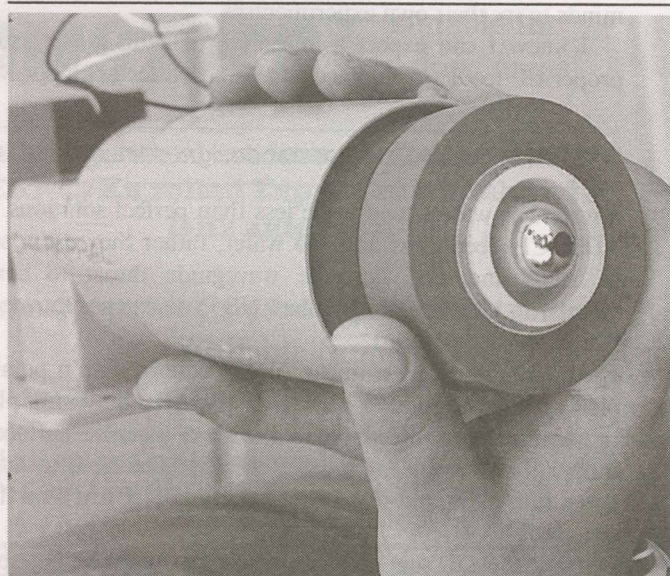
Equally important is fixing the feed's waveguide centre so that it points straight at the centre of the dish. One 'trick' to accomplish this is to use a low cost 'Laser Beam' accelerator. First, set up the feed supports using old fashioned mathematics and a measuring tape. The distance from the dish centre surface to the feed's outer (nearest to dish) rim is determined by the f/D calculation, which can be measured. But the focusing of the feed, ensuring it points directly at the dish centre and not high or low, left or right, requires some additional skills. Some dishes allow you to look through a hole drilled in the exact centre of the dish back plate, sighting towards the feed. The hole functions as an alignment point and if you can see from the rear of the dish through the hole to the feed, adjusting the feed so the hole and feed centre align is fairly straight forward.

Alas, this is not possible with the Motucka 7m family of dishes. The two photos (right) suggest a solution to feed-centre to dish-centre alignment. The feed has a round waveguide opening (bottom photo) and if you temporarily install a laser-pointer in that hole, centred in the feed opening, with the feed installed on the dish, the (typically) red laser point(er) will fall on the dish surface proper. The feed mounting can then be adjusted until the laser point falls directly onto the dish centre.

Here (top photo), a laser pointer has been installed in a 'sandwich' created with common parts: two rolls of tape, 35mm plastic film canisters (which fit into the tape centre hole), and of course the laser pointer. This assumes the feed



Above-35mm film canisters, 'calibrated' rolls of tape centre Laser Light tool; below - which fits snugly into feed opening allowing laser spot to strike dish centre.



has been installed in a way that allows you to adjust where it points by a few degrees, using feed-to-mounting plate adjusting screws. The laser light is very visible when striking the dish surface, even in bright sunlight.

"Clips" in lieu of "Chunks" to create circular polarity

Bill Hyman, PCS-TV (11) Pago Pago, American Samoa (billh@samoatelco.com)

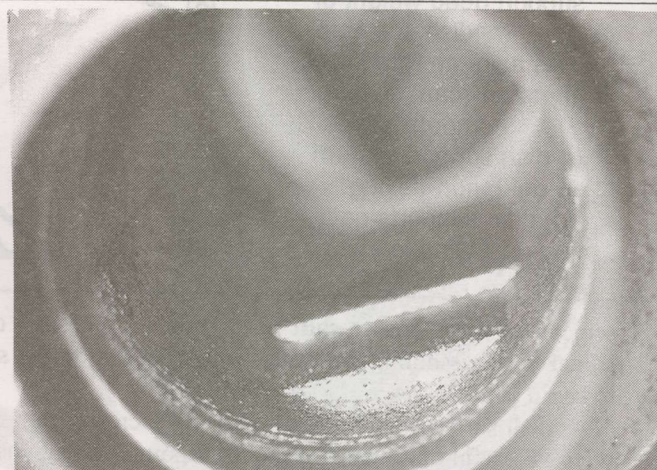
This might be entitled, "The illusive dB - for pennies". I am not a mathematician and what I know about microwave is that it takes 1.75 minutes to nuke my tea. But I have always been an experimenter because sometimes not knowing something is an advantage!

For some time I have been attempting to become Fiji TV's agent to sell and install DTH systems in American Samoa, and, the Tokelaus. To date, they have not said "Yes", "No" or even "Maybe". One of the challenges is that the 1.2m dish, which Fiji believes should work here, does not. I happened to be in Apia (Western) Samoa, 100 miles to my west, when they tested a 1.2m. I later returned to Apia at the request of the local PPV service to install an offset feedhorn to their 7m dish so they could transmit Fiji TV's Super 12 feed (on Fiji's PPV channel).

With the exception of that (Western) Samoa experience, here on American Samoa I have found that a solid 6 foot dish works with a quality ADL CP (circular polarity) feedhorn. However, there has not been sufficient signal to load both transponders if you are using a standard feedhorn with a polarity wafer; the weaker transponder is about 2 dB down. For a while it looked as though an 8 foot solid dish would be the best commercial answer, using a standard (with or without a wafer) as this would be less expensive than a 6 foot equipped with a 'real' (as in ADL, Av-comm) CP feed (the feed costing more than the dish!).

After some experimentation, there may be another solution to this and I encourage SatFACTS readers with inquisitive minds to try their own experiments.

I know I can expect a minimum of 1 dB when using a proper CP feedhorn in place of a standard feed equipped with



Desirable ADL circular feedhorn, uses quarter-wave stubs (right, interior). Feeds here are heavily weathered (I am only one mile from the ocean).



(Above) ADL polarotor designed linear feed. (Below) Modified plastic feed (metallic coated); see text.

a wafer, as wafers tend to be less than perfect solutions. The ADL (CP) feedhorns have no wafer, rather they use a series of 'steps' moulded into the waveguide throat to convert circular to linear in front of the LNB. You can see the steps in the photo (upper right).

Above, middle, is a linear ADL feedhorn with a polarotor pick up. To the right, a version of the ADL but using plastic rather than cast metal (coated with a metallic surface for transmission of the microwave energy). The LNB to left fits down into the round rear-of-feed opening (see text); no flange required!

The CP ADL suggested to me that it might be possible to take a linear designed smooth throat feed and create my own 'steps', eliminating the wafer and adding the 1 dB one always loses with a wafer. First to create an adapter that would fit over the plastic feed throat, allowing a standard WR-229

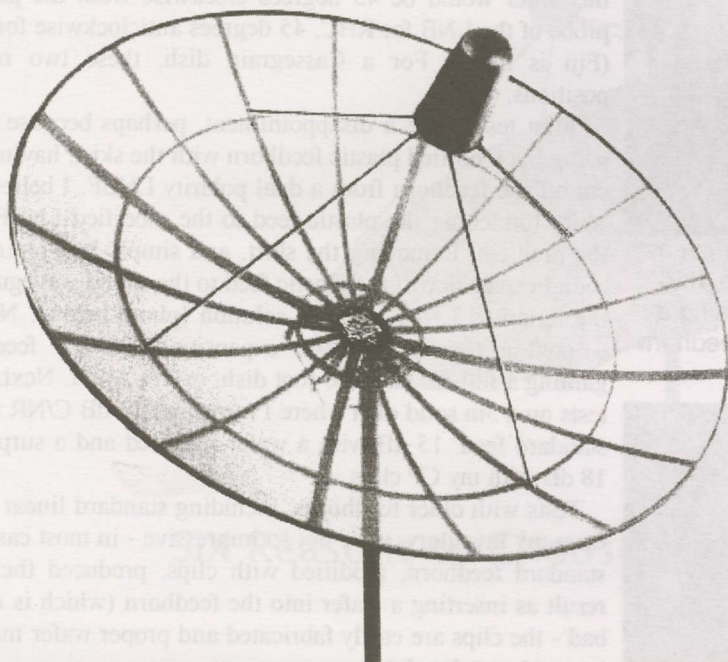




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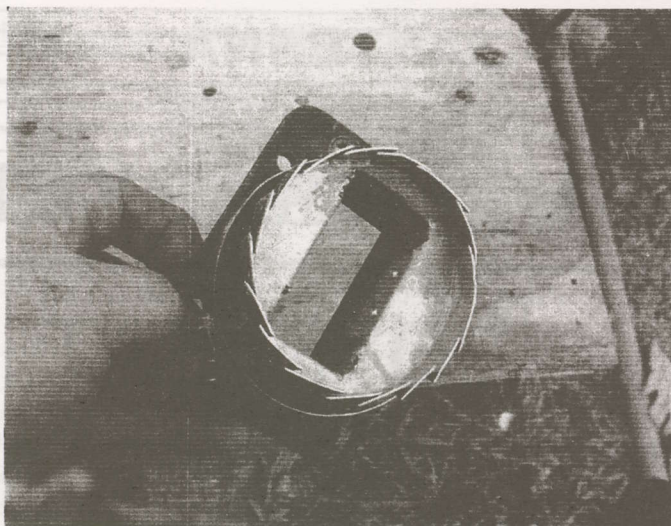
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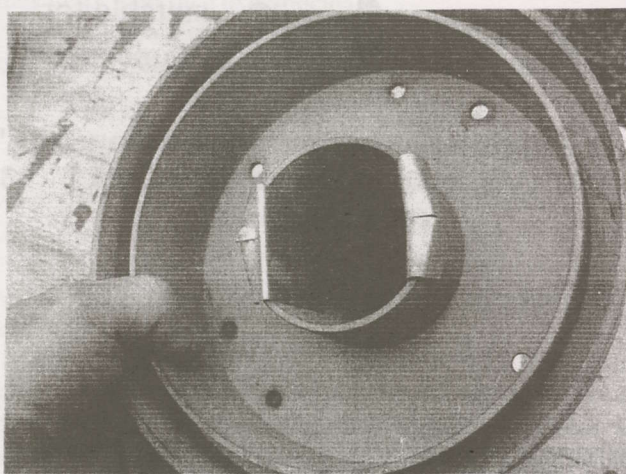
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The plastic metallic feedhorn weighs half as much as the earlier cast metal versions. By pop riveting 1/16" aluminium sheeting onto the LNB flange, forming a skirt, which is held over the main body of the feedhorn with a hose clamp. (Below: 'CP Clips')



The Circular Polarity ADL creates the shift from circular to 'artificial linear' with raised cast quarter wave humps/bumps inside the microwave (waveguide) throat. My technique is to replace the bumps with something I call 'CP Clips'. These fit down into the open end of the feed as described.

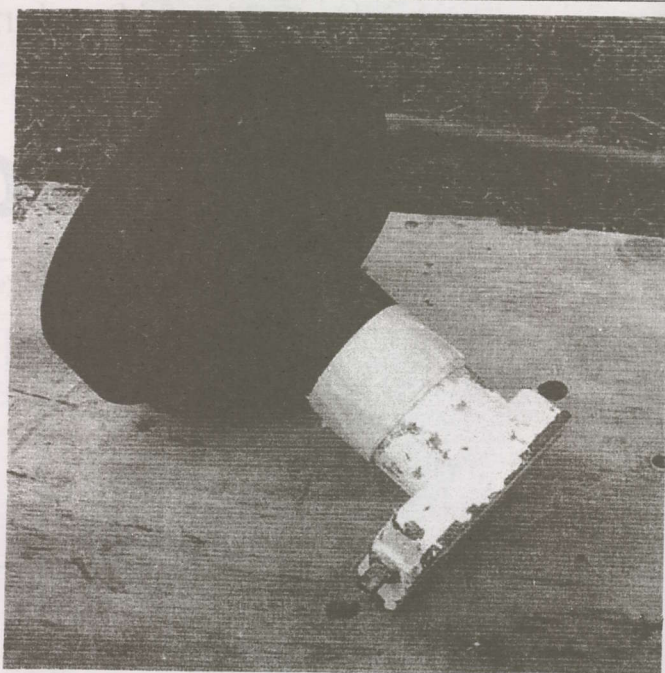
flange to be fitted. The adapter ('skirt') is shown in the upper left photo, here.

Next the steps. I call them 'CP Clips', created from 1/16" aluminium flat stock. Middle, left, the clip shown (in hand) will be installed diametrically opposite the one previously installed (see throat of feed, right of hand). The imaginary line joining the centres of the two 'flats' should be positioned at the same angle as the wafer it replaces, which is 45 degrees to the LNB pick up probe. When looking into the feedhorn, the wafer would be 45 degrees clockwise from the pick up probe of the LNB for RHC, 45 degrees anticlockwise for LHC (Fiji is LHC). For a Cassegrain dish, these two reverse positions.

First tests were a disappointment, perhaps because I was using the modified plastic feedhorn with the skirt, having also cut off the feedhorn from a dual polarity LNBF. I believe the 'skirt' (attaching the plastic feed to the modified LNBF) was the problem. Removing the skirt, and simply butt-taping the round waveguide of the plastic feed to the round waveguide of the modified LNBF was the solution (photo below). Now, it worked just as well as an expensive ADL CP feedhorn, gaining a full dB on the 6 foot dish, over a wafer. Next, I ran tests on a 5m solid dish where I measured 13 dB C/NR with a standard feed, 15 dB with a wafer installed and a surprising 18 dB with my CP clips.

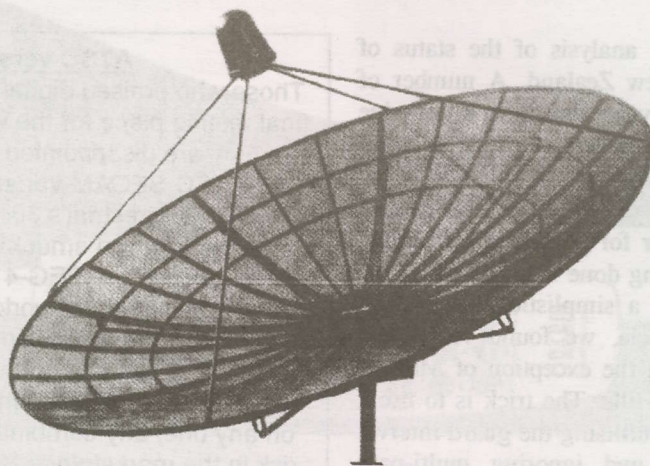
Tests with other feedhorns, including standard linear horns from my inventory, were not so impressive - in most cases the standard feedhorn, modified with clips, produced the same result as inserting a wafer into the feedhorn (which is not all bad - the clips are easily fabricated and proper wafer material is not always handy).

I encourage others to try the same approach. The clip goes down into the feedhorn throat by about 5cm - I suggest trying shorter and longer clips to determine the best size. I look forward to reports from others here in SatFACTS!



This approach worked best - 5 dB more signal with clips and the 'butt to butt' connection than with a straight linear feed on a 6 foot dish in Pago Pago. Clip size, position experiments might improve the performance even more.

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The very confusing world of SDT and HDT

SatFACTS #127 reported our analysis of the status of DVB-T/DTT in Australia and New Zealand. A number of readers have called (or written) to voice their own knowledge on this subject and much of this information is important enough to planners to share with you here.

Comment one:

"TVNZ's 1 kW test transmitter for Auckland is actually owned by BCL but the testing being done is under the direct control of TVNZ proper. Using a simplistic 25cm (long) antenna installed on a test vehicle, we found rock solid service throughout Auckland with the exception of Mission Bay, as far south as the Bombay Hills. The trick is to use a good quality STB capable of fully utilising the guard interval for maximising signal capture and ignoring multi-path reflections".

Comment two:

"In Australia, it is the law that the digital coverage be absolutely equal (in reach) to the (pre-existing) analogue. The

How many lines equals what???

Analogue:

NTSC - 525 lines of which 480 carry video
NTSC VCR (SP) - typically < 220 lines video
PAL - 625 lines of which 576 carry video
PAL VCR (SP) - typically < 250 lines video
PAL VCR (SP) - typically < 430 lines

Digital:

ATSC standard - 480 active video lines
PAL standard - 576 active video lines
ATSC Extended Def - 720 video lines (progressive)
PAL Extended Def - 720 video lines (progressive)
ATSC HDTV - 1080 video lines
PAL HDTV - 1080>1152 video lines (format varies)

Digital scanning rates:

Progressive scan (line 1, 2, 3 etc as in computer screens) or Interlace scanning (lines 1,3,5 etc.) possible with all digital formats although ATSC 480P and COFDM 576P hardly qualify as 'HDTV'.

telecasters have no choice about this and the engineering done prior to turning on digital reflects this condition. In some north shore (Sydney) areas, where analogue requires a 60 foot mast and fringe aerial, digital fills in with secondary transmitters. SBS has chosen to use SFN (single frequency network) whereas the others (7, 9, 10) have chosen MFN (multi-frequency network). The MFN approach is basically a digital translator (one channel input, another channel output). Using a mobile antenna, SBS is by far the easiest and best to 'take with you' - their same-frequency north shore transmitter is locked using GPS in phase to the main transmitter and as you roll along 'out' of one transmitter's coverage into the secondary (SFN) coverage, there is nary a blip or burgle. The commercials, 7, 9 and 10, have apparently chosen MFN as a means of retaining their license for a second transmission frequency should a need for it develop in the future".

ATSC versus COFDM

Those who praised digital MPEG-2 standards as the final resting place for the world's television standards are disappointed. From analogue's

PAL-NTSC-SECAM variants (there are 12 sub-sets), digital terrestrial's 30+ MPEG-2 variations is technology run amuck. And - MPEG-2 is being superseded by MPEG-4 (and others) even before most regions of the world have adopted MPEG-2!

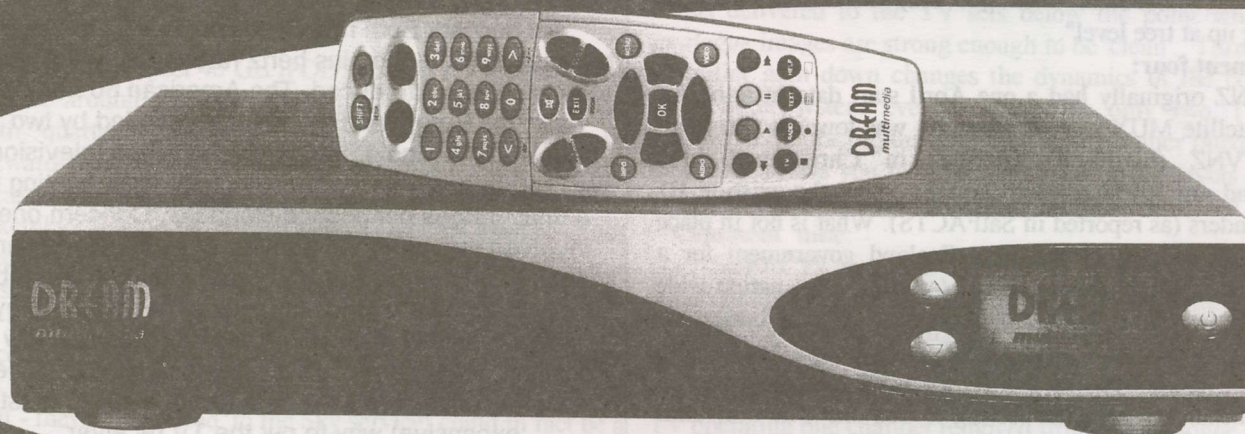
ATSC: The American (Television Standards Committee) has 18 approved software variations and STBs or in-built digital tuning receivers can function on any one, any combination or all 18, at their own risk in the marketplace. ATSC differs from COFDM largely in the capabilities of the original software design; it began with HDTV (high definition television) as a design goal. COFDM has been a European creation, focused on SDTV (standard definition television). However, Australia has pioneered COFDM as an HDTV format (in addition to SDTV) proving, if nothing else, that software can be manipulated to do pretty much anything you please.

ATSC claims to be 'more robust than COFDM' (more difficult to degrade at a reception site) in the presence of electrical/ignition interference. Practical experience does not bear this claim out. COFDM claims to be more sensitive to low signal levels (to the STB, digital tuner receiver). Experience, absent long term side by side testing of COFDM and ATSC, leaves this claim untested (although Australia's original side by side testing did suggest this to be the case).

Until 2004, European nations adopting COFDM pretended there was 'no consumer interest' in HDTV, claiming 625/576 line PAL grade SDTV was adequate for all but very huge display screens. However, their attitude has changed and the BBC (and others) are now scheduling a roll-out of a COFDM version of HDTV (very similar if in fact not identical to the Australian model). Sony has been very aggressive in pushing this agenda (as well they might be as a primary supplier of HDTV receivers), conducting show 'n tell seminars throughout Europe to demonstrate their perception of why HDTV is not only better than SDTV, but, inevitable. They are largely playing to political agendas ("The rest of the world is adopting HDTV - Europe will have a second-rate television delivery format if it insists on staying with SDTV")., packing their public displays with politicians and bureaucrats whom they hope to motivate. The European engineering community, however, remains largely non-impressed with the displays shown to date and the final decisions relating to introduction of HDTV using terrestrial transmitters have yet to be reached.

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Comment three:

"The success rate for digital in Australia is extremely high provided the viewer is using a quality STB (or digital tuner equipped TV set), and, the aerial system does not create an impedance mis-match with the STB. The primary area of intolerance seems to relate to 'standing waves' (VSWR) on the transmission line-aerial system. Having said that, we have not experienced the high rate of failure which the UK reports with pre-existing analogue aerial systems. I believe the concerns about installers having to hunt for signals on a roof are misplaced; the aerial systems, we find in Australia, are very much over emphasised. I have personally conducted tests with a mobile antenna on a vehicle creating perfect digital lock at street level in reception areas where all around me the homes have elaborate (analogue era) masts and antennas sticking up at tree level".

Comment four:

"TVNZ originally had a one April start date in mind for their satellite MUX and all planning was towards that goal. The TVNZ (hardware) facilities in Christchurch and Auckland are 100% ready to turn on using the existing B1 transponders (as reported in SatFACTS). What is not in place is the full support of the New Zealand government for a dual-level digital rollout plan (satellite for nation-wide coverage, terrestrial for metropolitan service). The budget for this seems very liquid, with TVNZ unable to get government to sign on the dotted line thereby allowing the broadcaster to move ahead. My personal feeling is this one will wait until after the September-November election. Your analysis of how the voters might react when they discover their existing TV service will be facing a major and expensive retrofit is quite possibly spot on; a viewer revolt at the polls is not in the best interest of the present government seeking reappointment for another term in office".

Comment five:

"Using a 8 MHz bandwidth for each channel, such as New Zealand would, will allow a 24 Mbit data rate. The vast majority of what one sees on television can be transmitted at a rate between 2 and 3 Mbit/s. Remember, the very best quality DVD delivers no more than 5.7 Mbit/s. The practice today is to utilise statistical multiplex, compressing slow changing video (such as a news presenter - talking head) so that on average it requires even less than 2 Mbit/s. Therefore, the goal at TVNZ (as elsewhere) is to create 8 data (programming) channels totalling 24 Mbit/s. That works out on average to 3 Mbit/s each with statistical multiplex controlling how much bandwidth goes to each programme channel at any instant in time. A one-half satellite transponder space (27 MHz) provides approximately the same multiplex opportunity. Therefore, for each 'terrestrial digital TV channel allocation', there are 8 simultaneous programming opportunities in New Zealand. One of the possibilities is for TVOne to telecast its 8PM scheduled show on multiplex channel '1', TV2's 8PM show on '2', and then use the remaining 6 programme channels in that UHF 8 MHz bandwidth to telecast time-delayed (such as '3' TVOne 6PM, '4' TV2 6PM, '5' TVOne week-ago-today-8PM, '6' TV2 week-ago-today-8PM) material. With two left over in just that single UHF channel, archival materials, a news channel, a sports rerun channel - the possibilities are many. And, if TVOne and TV2 both had individual UHF channels, the total

Standard 'def' versus High 'def'

Analogue NTSC claims to display 525 horizontal lines on the screen while analogue PAL claims 625 lines. The 100 line difference (19% line count improvement) is to a large extent the visible superiority one sees when the same event is displayed simultaneously on side by side NTSC and PAL receivers. The French SECAM system has a 819 line foundation, making it 56% higher-def than NTSC and 31% better than PAL.

However neither NTSC, nor PAL, utilise all of the available on screen lines for video; some are given up to allow the image to be appropriately synchronised at the frame rates that apply to each. NTSC transmits 30 frames per second (an entirely new, refreshed, image every 1/30th of a second) while PAL has 25 frames per second. Both rates were originally chosen because of the AC mains hertz rate in operation when television was introduced. The American 60 hertz AC rate, the European 50 hertz rate, divided by two equals the 30 and 25 respectively. When television was introduced, there were two challenges relating to a final 'frames per second standard'. Concern one involved the minimum number of new images per second to create the illusion of real motion (remember - motion appears on the screen only because the eye is shown a new altered image which has the new position of the items on the screen imprinted). The second concern was the best (read: easiest, least expensive) way to put the TV receiver in-synchronisation with the image scanning equipment (camera) at the TV station. With 60 or 50 hertz AC available, a circuit to 'lock' the TV receiver image to the same AC hertz as the TV station was locked to, was the answer.

When all of the 'magic' is applied, NTSC 525 lines results in (best case) NTSC 480 lines of actual image on the screen and PAL 625 becomes PAL 576. In both COFDM and ATSC, SDTV involves the same number of lines as analogue does today.

HDTV, on the other hand, adds lines by equipping the studio/film/video source with more image creation lines. SDTV requires a fixed amount of 'bandwidth' (spectrum space) to transmit. HDTV requires more than SDTV simply because the number of lines (amount of material) for each frame has increased. SDTV typically requires between 2 and 9 megabits per second of 'space' whereas HDTV doubles that (up to 19 Mbit/s). SDTV is 'spectrum-use-friendly', HDTV is not.

HDTV requires something more than 480/576 lines, but how much more? EDTV (extended definition) falls mid-way between HDTV's typically 1080/1152 lines and SDTV, with 720 lines. And it is less spectrum hungry. *But is it HDTV?* Japan's NHK is playing with 4,000 line displays requiring M/s rates of 60 (!). Further complicating a 'world standard' is the debate between 'progressive scan' and 'interlaced scan'.

Computers use progressive, TV sets have used interlaced from day two onward. The viewer may not even notice the difference but those who hold patents on one (or the other) certainly will! Currently available LCD and plasma design displays work best at progressive, badly with interlace, especially HDTV.

number of programme channels available would be 16, not 8 (as in 2×8)".

Comment five:

"At about the same time as SatFACTS came out, LG Electronics announced a new DVI (interface) 127cm/50" plasma screen digital tuner equipped receiver which is in (Australian) stores for around A\$8,000; certainly under the A\$10,624 price noted on SatFACTS front cover. SDD sets with tuners are in fact available for under A\$700. Using DVI circuits, the Toshiba HD MMI PVR with 160 GB of hard drive memory provides a direct connection to a HDD-ready receiver, some of which are being advertised for under A\$900. Certainly the pricing will always be lower than any printed publication attempts to report on a monthly basis, competition plus volume is driving down the prices weekly".

Comment six:

"MPEG-4? I expect 40 GB iPOD family STB + DVRs to be available around the end of the third quarter - start of the fourth quarter (September-October) which will also be backwards compatible to MPEG-2. Unfortunately for any telecaster selecting MPEG-4, if you are dependent upon the marketplace having the correct (MPEG-4) STB in their hands to receive your transmissions, it could be a several year wait - unless you (such as TVNZ) are willing to introduce a brand new service exclusively built around the consumer acquiring the correct STB for your transmission format. New Zealand, with virtually no STBs in private hands (those of Sky do not count - they are 'married' to the Sky service) could in fact be a perfect place to introduce a new format such as MPEG-4, and avoid conflicts with older style (such as MPEG-2) format equipment already in place".

Comment seven:

"You mention Wellington as a 'problem case' for terrestrial digital. While it is true that Wellington has something like 47 separate analogue transmitters serving it, in the majority of cases the terrain is not creating weak signals, it is multi-path ghosting that is the problem. I am not aware that anyone (including TVNZ) has done a suitable DVB-T test in Wellington and that is a shame because if the Australian experience down in the manmade canyons of central Sydney, for example, is a guide, the latest decoding software coupled with SFN (single frequency networks) would, I suspect, reduce the number of transmitters from 47 to perhaps 10 or fewer for essentially saturation coverage of the area. And for those that still cannot get the picture? Satellite, of course".

Comment eight:

"I am confused by your suggestion that where both analogue and digital signals are passing through a masthead (or multiple-outlet system distribution) amplifier, the answer is to increase the gain? I suggest the answer is just the opposite - turn the gain *down* so the amplifier adds less, not more signal to the system. Remember, digital starts out being 20 dB lower in level than analogue in recognition that a digital STB or receiver tuner requires on average 20 dB less signal to perform properly".

Response:

SatFACTS suggested, "Higher output capable amplifiers may be a partial solution" (#5, page 12). 'Output capable' is the key phrase here - meaning, if the amplifier is being overloaded when the digital signals are added to the spectrum - replace the existing amplifier with one capable of producing a greater output than the one currently being overloaded. We

are saying the same thing and making the same suggestion here - but saying it in two different ways. An amplifier (any amplifier) has a maximum rated output. If the original (analogue) installer adjusted the amplifier's gain control so that the amplifier produced maximum output before overloading, when digital signals appeared at the input, now the sum of the original analogue plus the new digital exceeds the amplifier's rated output capability. You could turn down the amplifier gain (assuming the amplifier has an adjustable gain control), thereby reducing the summed (analogue + digital) output and possibly stop the overload condition, or, you could replace the amplifier with one rated to handle a greater output. The problem with turning the gain down to fix the overload is you may in that process reduce the signal levels delivered to the TV sets below the point where the *analogue* images are strong enough to be 'clean'. Turning the amplifier gain down changes the dynamics of the complete distribution system even if there are only two TV sets connected. Replacing the amplifier with a higher rated output amplifier allows you to retain the prior signal levels for the analogue channels without creating amplifier overload.

Comment nine:

"SatFACTS suggests that when a digital channel is immediately adjacent (in frequency) to an analogue channel (such as 7 analogue to 8 digital), this creates digital reception problems. By our Australian experience, I disagree. We have yet to find any situation where having a STB or digital tuning TV operating one channel removed from the analogue service has caused problems for the digital reception. Modern TV receivers, most STBs of quality, employ 'saw filters' to separate two adjacent channels. Yes, the original TV sets with 2 or 3 or even 4 IF stages had a definite challenge when trying to receive immediately adjacent analogue channels. Today's filters create what is essentially a square-top response curve, sending the adjacent(s) down 40-50, even 60 dB. And the digital demodulator is mostly ignoring the analogue signal, as long as it is not (in frequency) right on top of (same channel as) the digital signal; this is a 'non-problem'".

Response:

You may well be correct. Of interest, the primary region reporting this as 'a problem' is the UK and in our checking we found the pre-existing analogue transmission powers in many UK 'digital/analogue cell sites' are 30-40 dB stronger (rather than 20 dB stronger) than the newly added digital. Perhaps the UK problem is also 'amplified' by their heavy use of masthead and distribution amplifiers for the 'block housing' that is so common there. The UK admits they have much refinement work to do in getting digital operating at 'proper power levels'. Longer term, when analogue turns off at some future undecided date, the problem will go away - if the viewers can cope in the interim!

Comment ten:

"Motor vehicle noise, electrical equipment radiation, is a fictitious boogey-man. Current digital demodulator circuits basically ignore these random pulses and if you want proof of that, come ride with me in my car sporting a 25cm 'whip' antenna through downtown Sydney while monitoring SBS. Buried in deep man created canyons of concrete and steel, surrounded by motor vehicles of all types and sizes, the reception never falters".

An invitation we intend to accept at some future date. What a wondrous world this would be, if this is true!



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IF SECTION

Input Frequency Range : 950 - 2150 MHz
 Input Frequency Level : -65 dBm ~ -25 dBm
 Noise Figure : 12 dB Max.
 Input Impedance : 75 ohm
 I.F. Bandwidth : 36 MHz
 Input Return Loss : -8 dBm
 Tuning Step Size : 125 KHz
 Demodulation : Shaped QPSK
 Symbol Rate : 2-45 Mbauds
 FEC Rates : 1/2, 2/3, 3/4, 5/6, 7/8, AUTO

LNB SECTION

Connector : F-Type - Loop-through
 Power : 400 mA Max.
 Polarization : Horizontal : DC 16-19 V
 Vertical : DC 11-14 V
 Band (Hi/Low) Selection : 22 KHz On/Off
 DiSEqC 1.2 USALS : 64 Universal LNB Control

SYSTEM RESOURCES

Processor : 32 bit (80 MHz)
 SDRAM : 8 Mbyte
 FLASH : 2 Mbyte
 EEPROM : 32 Kbyte

VIDEO SECTION

Decoding : MPEG-2 & MPEG-1 Compatible
 Compression Technique : Main Profile, Main level
 Format : PAL (NTSC)
 Frame Rate : 25 (30) Hz
 Aspect Ratio : 4:3, 16:9
 Active Pixel : 720 x 576, 720 x 480
 Output Impedance : 75 ohm
 Composite Output Level : 1Vp-p±0.07Vp-p (75 ohm load)
 S/N Unweighted : 57 dB Min.
 Frequency Response : 3 dB Max. (0.5-5.0 MHz)
 Data Rate : Up to 15 Mb/s

AUDIO SECTION

Compression Technique : MPEG-1, 2 Layer 1 & 2
 Sound Mode : Dual (Main/Sub), Stereo
 Frequency Response : 2.0 dB - 20 Hz to 20 KHz
 Output Impedance : 600 ohm unbalanced
 Total Harmonic Distortion : 1% Max. - 40 Hz ~ 20 KHz

CONNECTORS SECTION

A/V Out : RCA x 3
 RF Out : IEC Male
 Aerial In : IEC Female
 Service Port : RS-232C (115 Kbps Max.)

MODULATOR SECTION

Output: PAL G/I/K

CH

: 21-69 UHF

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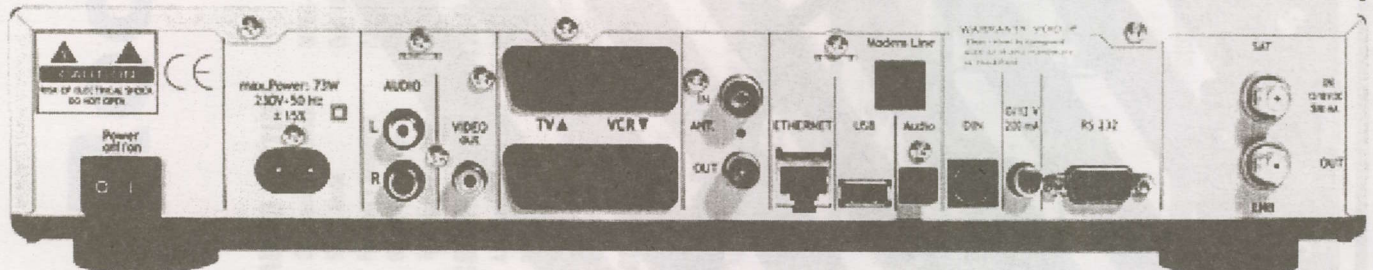
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Dreambox 7020 does NDS?



SatFACTS for July 2003 (Volume 9, #107) introduced the work of three German STB designers; the Dreambox 7020-S. Perhaps the most unique aspect of this new-from-ground-up creation was its use of Linux as an operating system, a departure from the Microsoft based systems that everyone else used at the time. Equally unusual was the fact that Dreambox Multimedia TV GmbH had origins in the grey market CAM (Magic Module) world which for the first several years of the 21st century pretty much dominated the TVRO marketplace. Could 'grey market guys' (read: pirates!) go legit and make a business based upon innovation rather than 'cracking'?

The Dreambox 7020-S is as new today as the 7000 was when SatFACTS first revealed what it did and how it did it. It is second generation and as such many of the mistakes and errors that crept into version one have been identified, and hopefully, corrected. Does the Emperor have new clothes? *The answer is yes.*

Past problems

The 7000-S was something short of being a 'perfect design' as many users can attest. The 7000 used NOR family flash chips for memory and apparently these Intel based chips had been selected for operating speed. Unfortunately, users were loading data beyond the capability of the NOR chips and this fatigued the functions, to the dismay of critical users. The 7020-S has upgraded to NAND family flash chips. The benefits (time will tell) should be quickly apparent to a user as the NAND device is serial memory commonly used in such memory-demanding devices as digital cameras and MP3 players. As an aside, NAND are less expensive to produce than NOR which will perhaps make replacements less costly.

The DM7000-S had a 'quirky' power supply that was susceptible to power surges, generated far too much heat (which had the effect of 'cooking' other interior circuit components). A newly designed PSU from Matsushita (Germany) hopefully will solve this problem and to be certain additional ventilation slots have been added to the metal enclosure. Finally, because the 7020 (and the to be released

7080 coming later this year) offer options such as a PVR hard drive (another energy user, big time!), the power supply needed to be 'beefier'.

The 7000 also suffered from bootloader problems, some caused by a failure to properly 'earth' (ground) the receiver, others created by the previously mentioned 'Flash fatigue' (the bootloader resided in the Flash). The solution in 7020 is to create a *pair* of bootloader stages; one internal Flash (as previously) but in NAND rather than NOR, and an external 'Boot Ram' with the same design approach as one finds in a PC.

Next they have replaced the previous (Korean) LG tuner (TDQF-S001F) with a Philips tuner (SU1278/LV2). Dreambox claims the Philips has better sensitivity, reliable customer support. Apparently, according to Dreambox, LG was not very helpful in sussing drivers for this system and after making a commitment to LG for tuners in the 7000, the designers were sorry for their decision. Certainly there have been complaints of inadequate sensitivity with the 7000 model.

Powering. DM7000 users were not pleased when their box 'hung up' and they were forced to trace the power cord to the mains plate and disconnect it for a reboot. The 7020 has added a rear deck on/off rocker switch so that if (when) the newer model does hang up, it is a switch to throw, not a mains plug to yank.

The new stuff

Firing up the DM7020, anyone familiar with the 7000 software will feel comfortable that this has the look and feel of an 'old friend'. However, looks can be deceiving. The previous version software (CVS/CDK) was strongly related to the German (pay) service Premiere DBox2 modifications while the new 7020 software is EliteDVD's OpenEmbedded based format. The basic menus are familiar looking, as is the function of the software itself. Channel changing seems smoother and faster - perhaps the result of placing more memory on the mainboard. You can transponder scan (search for and load) from the reasonably up-to-date factory installed memory (satellites.xml file). Adding satellites, or blind scanning requires 'after market software' which although it may be freely available on the web seems like a backwards step. Would it have been too difficult to give the 7020 blindscan straight out of the box? A Co-Ship from China does this and it costs under NZ/A\$100 per STB; not exactly rocket science, these days.

Disclaimer: This user report prepared outside of SF supervision by an independent receiver testing facility known to this publication for their work for more than a decade. SatFACTS has not actually seen nor tested the receiver reported here and the observations are those of the writer, not SatFACTS. We have edited the text to fit the available space.

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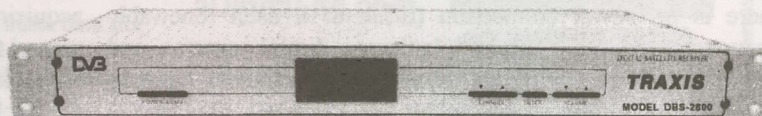


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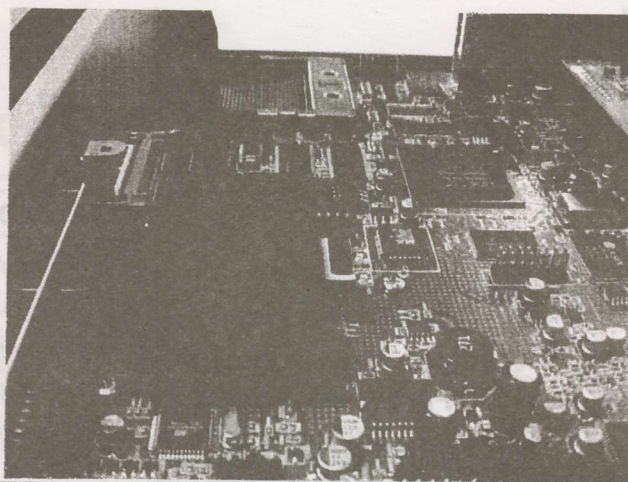
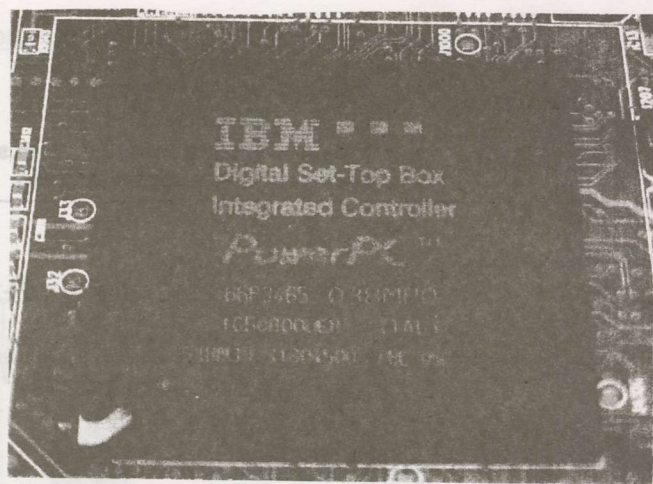
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Left - DM7020 'IBM Digital Set-Top Box' "brain" is the heart and soul of the STB. Right - There is something 'classically European' (even, German) about the layout, positioning of parts, cleanliness of design in the DM7020 which is missing in many Asian products.

Another new 'gadget' on board is a modem, inbuilt. Why a modem? Well, more and more often a STB is married to a telephone line for commercial purposes. This is a basic modem, apparently included to retrieve Email from the built-in Email client. It could also be used to browse Internet (the LINKS browser is built-in, which also supports DM's wireless keyboard with mouse control). The LINKS browser requires 3MB of memory, would not fit the 7000 without USB memory expansion. The 7020 firmware, however, is an 18MB.nfi image file that fits totally within the 32MB Flash memory, leaving memory space to add more (of whatever grabs your fancy).

Some discussion about the NAND and NOR. The DM7000 used NOR (Not OR gate logic) Flash Gate logics. Gate logics are circuits used to analyse electrical signals and reach a 'logical solution' (think of a logic flow chart from school). Flash memory is a form of non-volatile memory with the particular ability to maintain data (in memory) even when there is no power connection (think of it as a renewable permanent battery). Cellular telephones, digital cameras, and satellite/terrestrial STBs all require energy efficient memory chip circuits. Standard logic gates are, (1) AND, (2) OR, (3) NAND, (4) NOR and (5) NOT (Flash logic) chips. For NOR to 'be true', neither A (input) nor B can be true. For NAND to 'be true', either A or B must be true, or neither can be true but both cannot be true at the same time. The Flash memory market features NAND and NOR chips which of course differ in internal circuit structure. It turns out that NAND are more adaptable to high capacity (lots of action going on) treatment. And this device market is dominated by Samsung and Toshiba. The NOR chips, which excel for high speed data read / data write functions, are largely from Intel. The original decision for the DM7000 favoured NOR for the speed and perhaps this was a mistake because in everyday use the demands were for memory capacity plus speed. It is difficult to have both, but if you have to make a decision, memory capacity wins because NOR is stressed when the memory functions 'overflow' causing all sorts of unpleasant operating results.

Moving on, the new power supply looks as if it will be a much better performer - the unit runs decidedly 'cool' (something nobody could say with a straight face, about the 7000). Another new feature is a SIM card holder. Alas, the

firmware in the 7020 has not been implemented so one must assume this is some level of 'future function expansion' not yet divulged. What might you do with a SIM card capability? Well, it might be employed with a GPRS (mobile) cellular modem. Why would you want to do this? Again perhaps, as there is no direct factory information, if you lived where landline telephone was corrupted and you could only get reasonable web connectivity using GPRS, a SIM card would be a part of that activity. Then again, who knows why they really put it in!

Another, "what are they doing here?". mystery is found on the mainboard; a provision for a second tuner. Doing some background digging, it appears yet a newer version (DM7025), scheduled for release in June, will in fact have twin tuners (allowing simultaneous reception from two programme channels simultaneously). Does this suggest the 7020 mother board will also be the 7025 motherboard, with a second tuner added? Time will tell, as will experimenters acquiring the 7020 discover at some future date whether the second tuner can be user-retrofitted to the 7020 board!

Confusion point? The 7000 had a Mini DIN connector on the back apron, which some mistake to be a S-VHS output port. In fact, it was (and is) a motor / rotor driver connection. New on the 7020 is an 12V/200mA cinch power socket allowing you to supply an external device with power (again, thanks to the redone power supply unit / PSU).

Improvement. The 7000 arrived with virtually no C-band implementation. The 7020 has C-band software built-in. In fact the test would be from AsiaSat 2. A WWE (wrestling) feed was the subject, reasonably well known for its low signal level and difficult parameters. The reference receiver, against which the 7020 was compared, was the well respected ID Digital 2.4 which does well with the low threshold services one experiences from time to time. Three receivers were set up on this feed.

The 7000 had some difficulty loading it, more difficulty playing it without pixelation breakups. Blame it on the LG tuner, if you must.

The ID 2.4 loaded it quickly, played it well with occasional pixelation breakups - true to its reputation.

The 7020 loaded it quickly when the parameters were entered, and side by side when the ID 2.4 was having momentary hiccups, the 7020 did not.

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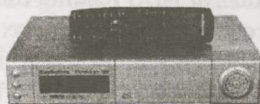
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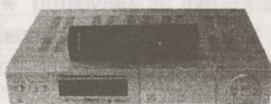


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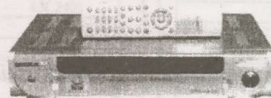
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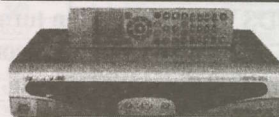
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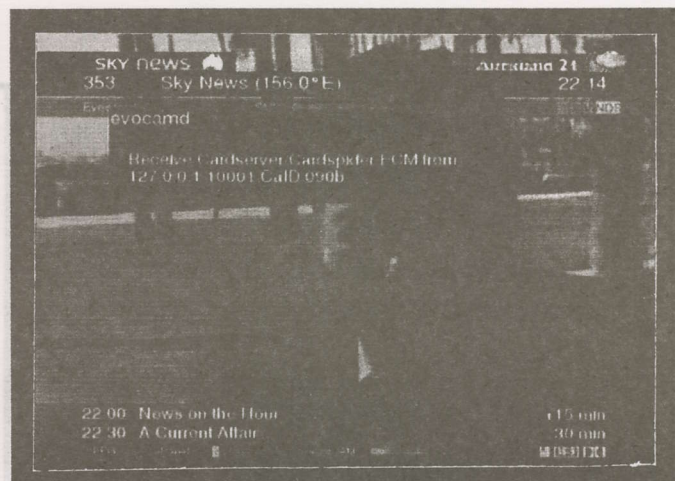
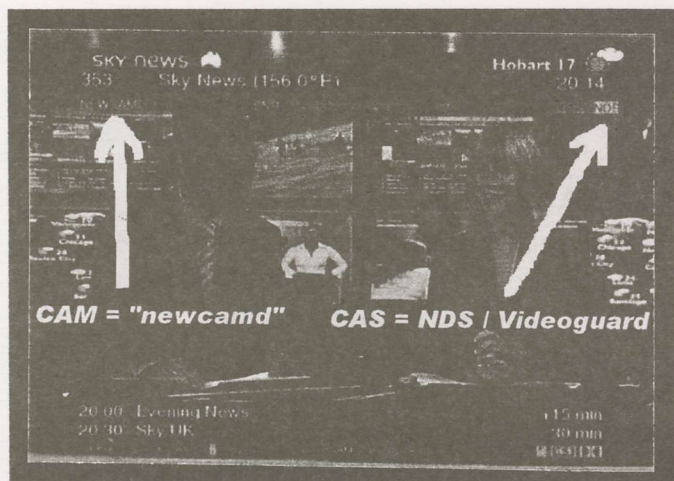
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Left - 'newcamd' identified plus 'CAS = NDS Videoguard' courtesy of Foxtel Sky News (C1). This is not piracy, merely use of a non-programmer issued box for pay-TV reception. Right - software identifies "EVOCAMD, receiveCardserver/cardspider ECM from 127.0.0.1:CAID090b" - Sky News Australia, on C1.

Encryption systems

The big money these days in satellite services is found in the pay-TV world where somebody with an encryption routine (such as Nagravision) convinces somebody with a programming service (such as Fiji TV) that their particular CA format is pirate and hack proof. This creates a marketing situation which the encryption folks (Nagravision, in our example) love because it means *every* receiver sold for use by that programmer (Fiji TV in our example) must have built-in their decryption format for their encryption system. Once a programmer commits to a particular encryption format, it is both difficult and very expensive to back out and go to a competitor. The programmer is risking a great deal on his choice of encryption because once he has a multitude of receivers in place, changing out to another system is either very expensive or very hard on the programmer's public relations department.

Dream Multimedia has their own encryption system (Dreamcrypt, the part they might sell to a programmer) and its only purpose in business life is to create a market for their decryption system - i.e., their STBs with their proprietary CA system inbuilt. Various claims are made for Dreamcrypt (SF#107) and if this reviewer were given the responsibility of researching a 'hack proof' system for a new programme service, Dreamcrypt might well be towards the top of the list. After all, these guys began as grey market folks (I am NOT calling them pirates, but if the label fits ...) and who would you hire to protect your valuables against burglars - some guys in button down shirts from Israel or Holland, or, people who worked out why other encryption systems can be made to fail?

The Dreambox 7020, with an appropriate CAM, *will* do NDS. That is not a statement about piracy - the receiver will NOT hack NDS, it will receive NDS provided the 7020 has the appropriate CI module inserted into the slot, *and*, (this is the legal part) a paid-for NDS reception card in turn, inserted into the (GBox) software CAM. Why would someone with a Foxtel or Sky NZ programmer-supplied STB want to spring for an additional box that does the same thing?

Because, multiple reports and tests indicate, it does *not* do the same thing. What it does, especially for that tiny segment of the market which finds existing Foxtel or Sky reception

less than laudable on their 42" Plasma screens, is make a better picture. Sometimes, a much better picture.

"Crisper, sharper in detail, much more pleasing" is a quote from someone in southern North Island who went to the effort, trouble and expense to replace his Sky NZ (Motorola) STB with a Dreambox 7020. This STB provides outputs in FBAS, RGB, S-VHS. Just as one example of the potential improvement, S-VHS through Dreambox 7020 hands the display system 400 lines of video to play with while the Motorola STB even through SCART is typically in the under 300 line region. But this is not exclusively a 'lines of video' function - the video processing circuitry also becomes a factor in the ultimate display the viewer sees. This is not a 'videophile' review, but it would be remiss to not mention that the Dreambox 7020 possesses the capability of creating better large screen images than most of the programmer supplied consumer STBs.

Restating, this is not a 'piracy function' and other than their wounded pride for not offering consumers better quality digital TV, the folks at NDS reading this need not be alarmed that Dreambox, equipped with a GBox CAM, authorised by one of their paid-for subscriber cards, is indeed a functional alternative to the standard grade STB. Technically, the Videoguard NDS subscription smartcard in a LINUX operating system (OS) is nothing more than adapting the best to work with an additional CA system. Additionally a second softcam known as 'newcamd' will do the same thing (photos, above), but this has been primarily used in Italy where NDS's Videoguard took over from a previously SECA CA system.

So is this ...

...a worthwhile investment? The original 7000 series had problems, and perhaps the 7020 with so many wholesale modifications will have a new set of problems. For now, the test unit reviewed has run quite flawlessly for 3 months. But, it is not everyone's STB, possibly not for the average consumer - short of the dealer being quite dedicated to setting it up so that the consumer has little to do after the installation but push the channel change button. It is more STB than most consumers want or need, with capabilities which only an 'enthusiast' can salivate over. For those still searching for the next plateau, it is largely in the 7020 - short only the failure to do blindsearch without aftermarket (Internet) posted help. That shortcoming remains a mystery.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 APRIL, 2005

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Thom3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5,000
	ANT Greece	3672/1478H	1 TV	3/4	13,333
	Korean Central	3665/1485H	1	2/3	3,367
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28,066
	Ch Nepal	3626/1524V	1	3/4	15,556
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26,667
	SE asia Mux	3569/1581H	2+ TV	3/4	12,500
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13,333
	JAIN TV	3538/1612V	1TV	3/4	3,300
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3,333
InSat 2E/83	FTA Mux	3520/1630H	12TV, 12 radio	3/4	29,800
	TVK Cambodia	3448/1702H	1TV	1/2	6,312
	TARBS/TbS	3480/1670H	12 TV+radio	2/3	26,667
	KCTV/Korea	3424/1726H	1TV	3/4	3,366
	Thai Global	3425/1725V	up to 7?	2/3	27,500
	ETV mux	4005/1145V	6+ TV	3/4	27,000
	Hyd Dig 2E	3910/1240V	1	3/4	5,000
	Kairali TV	3699/1451V	1	3/4	3,184
	Indian mux	3643/1507V	3	3/4	19,531
	ETV Mux#2	3485/1665V	4+TV	3/4	27,000
NSS6/95E As2/100.5E	Sky Bangla	3430/1720V	1TV	3/4	6,000
	Ant Pac (Greek)	11,104H-Australia	1 TV	3/4	2,800
	Guangdong TV	4075/1075H	1TV + radio	3/4	6,000
	Euro Bougt	4000/1150H	6TV, 21r	3/4	28,125
	Reuters News	3905/1245H	1TV	3/4	4,000
	WorldNet	3880/1270H	4+28radio	1/2	20,400
	APTN Asia	3799/1351H	1	3/4	5,632
	Reuters/Sing.	3775/1375H	1	3/4	5,631
	APTN Asia#2	3705/1445H	1	3/4	4,166
	Macau MUX	4148/1002V	5TV	3/4	11,850
As3S/105.5E	Dubai MUX	4020/11430V	4+, radio	3/4	27,500
	Fashion TV	3796/1354V	1	3/4	2,626
	Trace TV	3792/1358V	1	3/4	2,400
	BYU-TV	3767/1383V	1 + 20 audio	1/2	6,525
	3-ch miniMUX	3752/1398V	up to 3	3/4	5,640
	Saudi TV1	3660/1490V	7+tests	3/4	27,500
	CETV digital	3680/1470H	1+ TV	3/4	26,670
	Zee bouquet	3700/1450V	10TV	3/4	27,500
	Ch News Asia	3706/1444H	1TV (+)	3/4	6,000
	Azio TV	3716/1434H	1TV (+)	3/4	7,000
As3S/105.5E	3 ch MUX	3723/1427V	3TV	3/4	6,500
	SAB TV	3743/2407V	1TV	3/4	3,300
	Arirang TV	3755/1395V	1	7/8	4,418
	Now TV +	3760/1390H	up to 10TV	7/8	26,000
	Star TV	3780/1370V	7+TV	3/4	28,100
	GXTV	3806/1344V	1TV + 3 radio	3/4	4,420
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4,420
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4,420
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4,420
	HLITV	3834/1316V	1TV	3/4	4,420
As3S/105.5E	Star TV	3840/1310H	7(+)TV	7/8	26,850
	Star TV	3860/1290V	5(+)TV	3/4	27,500
	Abu Dhabi MUX	3880/1270H	8+TV, 10Radio	3/4	27,500
	Dragon TV	3886/1264V	1 TV	3/4	4,800
	Shaandong	3895/1255V	1TV + 6 radio	3/4	6,813
	Jilin TV	3914/1236V	1TV + 1 radio	3/4	4,420
	Star TV	3920/1230H	4+ TV	7/8	26,850
	Star TV	3940/1210V	6(+)TV	7/8	26,850
	CNNI	3960/1190H	8(+)TV	3/4	27,500
	StarTV	3980/1170V	6+TV	3/4	28,100
As3S/105.5E	Star TV	4000/1150H	8(+)TV	7/8	26,850
	Sahara digital	4020/1130V	8TV	3/4	27,250
	Hubel TV	4035/1115H	1TV + 2 radio	3/4	4,420
	Tianjin TV	4046/1104V	1TV + radio	3/4	5,950
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4,420
	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4,420
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4,420
	Pakistani TV	4091/1059V	5TV, 1 radio	3/4	13,333
	Sun TV	4095/1055H	1	3/4	5,554
	TVB8 Mux	4110/1040H	3	3/4	13,650
As3S/105.5E	Indus News	4115/1035V	1	3/4	3,222
	CCTV bqt	4129/1021H	4(+)TV	3/4	13,240
	Zee Bqt #2	4140/1010V	8(+)TV	3/4	27,500
	Henan TV	4166/984V	1TV + 4 radio	3/4	4,420
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4,420
	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4,420
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4,420
	Indovision (S-band)	2,535, 2,565, 2,595, 2,625, 2,655	33(+) TV	7/8	20,000
	IndoBqt	3460/1690H	up to 6	3/4	28,000
	TPI	4185/965V	1	3/4	6,700
As3S/105.5E	TVE Asia-Africa	4160/990H	1	3/4	5,632
	Anteve	4144/1006V	1	3/4	6,510
	Kabelvision Mux	4080/1070H	7+ TV	7/8	28,125
	Indostar	4074/1076V	1	3/4	6,500
	Satelindo	3935/1215H	1	3/4	6,700
	Bali TV	3926/1224H	1	3/4	4,208
	Indo MUX	3880/1270H	3+ TV	7/8	28,121
	TVRI	3765/1385H	1TV	3/4	5,555

Receivers and Errata

CA (#1, 3); FTA audio #2 (dn)
Late July 04: room for more (FTA)
Global footprint; changes 02/03.
CA + 2 FTA(A1TV, IRB3X)
New 03/03; FTA
Thai + Indian services; FTA
MRTV3, MRTV (DM)
3TV, 5radio inc. Hellas TV Greece FTA
PIDs 4132/4133
frequency change
Aug 04: 5TV, 1 ra FTA (India)
FTA
3FTA: TV5, VTV4, ATN Bangla
Not 24 hour, FTA?
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
Several new ETV here; Asia beam
New - November 2002
(still) FTA 011-04; was 11.083H
July 04: FTA
FTA TV + radio; TV5 Asia moved "down" April
Was 3923H; sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895Vt
FTA & CA
FTA and CA - NASA reports included
5 chs TV, FTA, some tests
FTA, EuroSport PID change (1213/1313) June
FTA as of May 1, 2003
new here Dec 2004; Euro-French music videos
Increased coverage; great variety audio chs(03-05)
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
replaces analogue same freq; V33, A32
Now SECA 2 CA (10-04)
New September 2003; English + V1160, A1120
Parallel to 3640Hz analogue (due to cease)
Conax CA, 3 ch movie mux; Dec 2004
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + FTA
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2
Was As2; HeiLong
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Shanghai
Apparently Mongolia; was As2
Was As2
Star Sports Asia (+), FTA NTSC; V514, A670 (10-04)
NDS CA as above; may NOT be operational
Pow Vu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September
Was As2
new December 2005
Was As2
Was As2
Was As2
new Sr, channels, Nov 2003
"History Channel" - SCPC, some English
MATV Chinese movies FTA +CA; new Sr 05-04
Hindi (+ "Plus")
moved from 4115
Now SECA 2 CA (10-04); 1 occ. FTA (varies)
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson,
Pace IRDs; 2.535 has 2 FTA
also 3586H/17.500, 3496H/19.615
FTA SCPC; NT/NC only
New August 2003
change from 4055V; FTA SCPC
also try 3500H, 27.000, 3/4; strong NZ
FTA (new 06-03); V2201, A2202
test card - only - reported
FTA, may not be active full time
FTA; Sr change 01/03; erratic
boomies btwn FTA and CA - unreliable (12-04)

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	Brunei/Sing	3733/1417H	1TV	3/4	6(,000)
	SCTV	3726/1424V	1TV	3/4	6(,620)
	RCTI	3473/1677H	2	3/4	8(,000)
As4/122E	Aust DTH test	12.453V	2	3/4	20(,000)
	CCTV internal	4020/1130V	6	3/4	27(,500)
	CCTV internal	4100/1050V	6	3/4	27(,500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(,000)
	Asian bqt	3960/1190V	up to 8	7/8	30(,000)
T18/138	Tests	3460/1690V	1	3/4	30(,000)
Jc2A 154	BYU-TV	3915/1245V	1+ 20 languages	3/4	4(,166) (?)
MeasSs2	Astro Mux	11.602H	up to 17TV	3/4	41(,500)
	VTV MUX	11.522V	3 TV	3/4	9(,766)
B3/152	AuroraBiz	12.407V	4TV, 10 radio	2/3	30(,000)
	Occ feeds	12.445H	1TV	3/4	6(,666)
	GloboCast 2	12.525V	13TV, 8 radio	2/3	30(,000)
	GloboCast (feeds)	12.550-555V	1TV	3/4 & 2/3	6(,110-670)
	GloboCast	12.564V/T13	2+ TV	2/3	30(,000)
	UBI/tests	12.613H/T14L	11+TV	3/4	22(,500)
	UBI/tests	12.640H/T14U	11+TV	3/4	22(,500)
	GloboCast 1	12.658V/T7	14TV, 15 radio	2/3	30(,000)
	UBI/tests	12.674H/T15L	11+TV	3/4	22(,500)
	UBI/tests	12.701H/T15U	11+TV	3/4	22(,500)
	WA ABC	12.702V	1 TV, 1 radio	7/8	14(,288)
	WA SBS	12.720V	4TV, 2 radio	5/6	12(,600)
	WA GWN/WIN	12.738V	2TV	7/8	14(,295)
C1/156E	Optus test bed	12.288V/T1L	6+ (ABC) TV	1/2	28(,650)
	Aurora	12.324V/T1U	4+ (ABC) TV	1/2	24(,450)
	Pay TV	12.365V/T2	11TV, 2 radio	3/4	27(,800)
	Aurora Home	12.407V/T3	5 TV, 13 radio	2/3	30(,000)
	Pay-TV	12.447V/T4	5TV, 4 data	3/4	27(,800)
	Pay TV (test)	12.487V/T5	3+ TV, data	3/4	27(,800)
	Aurora 2	12.527V/T6	7TV, 20 radio	3/4	30(,000)
	Pay-TV	12.567V/T7	10 TV	3/4	27(,800)
	Pay-TV	12.607V/T8	10 TV	3/4	27(,800)
	Pay-TV	12.647V/T9	10 TV	3/4	27(,800)
	Austar	12.305H/T11	6TV, 24 data	3/4	30(,000)
	Pay-TV	12.358H/T12	10 TV	3/4	27(,800)
	Pay-TV	12.398H/T13	10 TV	3/4	27(,800)
	Pay-TV	12.438H/T14	6TV, 3 data	3/4	27(,800)
	Pay-TV	12.478H/T15	10 TV	3/4	27(,800)
	Pay-TV	12.518H/T16	10 TV	3/4	27(,800)
	Pay-TV	12.558H/T17	10 TV	3/4	27(,800)
	Pay TV	12.598H/T18	TV	3/4	27(,800)
	Pay-TV	12.638H/T19	10TV, 30 radio	3/4	27(,800)
	Pay TV	12.688H/T20	11TV	3/4	27(,800)
	Pay TV	12.720H/T21	11 TV	3/4	27(,800)
B1/160	7 Central DTV	12.354H	1TV	3/4	5(,100)
	Occ. feeds	12.380H	1 TV - *	3/4	6(,111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(,111)
	Net 7 service	12.397H	1	3/4	7(,200)
	Imparja mux	12.379H	2TV + 8 radio	3/4	5(,424)
	7 digital feeds	12.397H	1TV	3/4	7(,200)
	Feeds to NZ	12.411V	1 TV	3/4	6(,111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(,600)
	TVNZ DTH	12.456V	5+TV	3/4	22(,500)
	TVNZ Tests	12.483V	up to 10TV	3/4	22(,500)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(,500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(,500)
	Sky NZ	12.644/671V	9TV	3/4	22(,500)
	ABC HDTV	12.610H	5TV	7/8	14(,3288)
	Sky NZ	12.707/734V	8+TV	3/4	22(,500)
	Mix 106.3	12.574H	1 radio + data	3/4	1(,851)
P8/166E	ABS-CBN	12.575H	4+TV, 4+ radio	2/3	13(,845)
	JEDI/TVB	12.686H	11+ TV	3/4	28(,126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(,500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(,125)
	Taiwanese MUX	4080/1070H	12+ TV	5/6	30(,000)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(,470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(,470)
	NET +	4121/1029V	1 TV	3/4	4(,774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(,470)
	Discovery	3980/1170H	8 typ.	3/4	27(,690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(,690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(,500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(,694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(,000)
	CCTV Mux	3829/1321H	up to 4+ 1 radio	3/4	13(,240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	22(,000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(,632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(,000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(,850)
	MTV	3740/1410H	8	2/3	27(,500)
P2/169E	WA Mux Pv	12.281V	3+ TV, radio	2/3	27(,500)
	Arlang TV	12.401V	1TV	3/4	4(,400)
	ABS-CBN	12.575H	4TV, 2 radio	2/3	13(,845)
	TARBS feeds	4090V/1060V	9TV + radio	3/4	21(,000)
	BBC SCPC	3986/1164H	1TV	1/2	5(,700)
	Middle East	3836/1314V	4 typ	3/4	13(,331)

Receivers and Errata

FTA : Singapore 23hrs, Brunei 1 hr, Brunei V1200 was on 4048V; New Caledonia, parts of Australia FTA SCPC; Australia, New Caledonia, some English Planned Aust DTH; VTV CA, other FTA (10-04)

New Aug '04, Irdeto 2

New Aug '04, Irdeto 2 + TVSN occ. FTA

PowerVu; some FTA (Ch. 1 & 3)

CA & FTA NTSC: Japan, Taiwan

also try 3600Vt, Sr 30,000, 3/4; some occ. FTA

Strong NZ & Australia; may now be 1/2, 6,525

Aust East beam - 3 FTA + 14 CA

WA only? Skew path, intended Asia

differs from 12.407 C1; **tune ch FTA; NZ+Au**

Net 10, V8 racing; also 12.452H, same parameters

NZ + Au, FTA Mcript CA

occ feeds, NZ + Au, recently 12.553V

New Feb 05, TVN racing, TV Korea, Telepace

High performance beam; not NZ

High performance beam; not NZ

NZ + Au (Mcript, PowVu capable)

High performance beam; not NZ

High performance beam; not NZ

ABC WA tests, FTA

SBS, radio tests WA FTA

Irdeto V2 CA, tests (GWN, WIN)

Widescreen ABC service feeds x 6 + tests; 29 radio

CA, replaced Aurora T10 1 February 2005; 19 radio

Tests; SBS-NDS CA, others FTA when here

NZ (90cm) + Australia (**Only svc left on NZ; C1**)

Australia NA only (leakage to Norfolk, New Cal)

Australia NA only (leakage); 9-Net x 3 widescreen

Arrow radio (still here), tone FTA

Pay-per-view movies; CA

Pay-per-view movies; CA

Pay-per-view movies; CA

Austar inter, **Expo FTA**

NDS CA + Mcript, CA

CA, subscriptions available Australia, Norfolk

Sky News active; 'Help x 2' FTA

CA, subscriptions avail Au, Nrlrk; **TVSN FTA**

CA, subscriptions available Australia, Norfolk

*Home*CA, subscription available Australia, Nrlrk

CA, subscriptions avail Australia, Norfolk

CA, subscription available Australia, Norfolk

CA, subscription available Australia, Norfolk

CA, tests at this time, TVSN FTA

Central beam; originally to feed Tasmania

* - plus 12.451H, 12.460H

* - plus 12.293V, 12.402V, 12.411V

Full schedule less commercials - links, may be CA

PIDs vary; also try 12.360, 12.370

occ. digital feeds; typ fla

Often NTSC; USA-Australia-NZ

Also 12.437H, 12.456H same params. HDTV-W/S

FTA 7 channels (TVNZ x 4); +Maori_DW, CCTV

Testing late Feb; possible FTA MUX coming?

NDS CA, subscription available NZ

NDS CA, subscription available NZ

NDS CA, subscription available NZ

also see 12.626, 643, 670, 688, & 706H

NDS CA, subscriptions available NZ

Radio SCPC is "cover" for high speed data

CA

June 2002-Irdeto-2 CA

Dateline west, also east PAS2, 3901V

PowVu CA

Tests - CA service announced

PowVu CA & FTA; subscription available

was PAS-2, previously 3992Vt; **feeds FTA**

NET25 + FTA; new PIDS April '03; reload

PowVu CA; ch 11 DCP-CCP bootload; audio FTA

PowVu/CA (some audio FTA)

PowVu CA & FTA (EWTN + CBS + TBN +)

NDS CA (6 channels); one test card occ FTA

Myx FTA V1960, A1920 + radio FTA

Mixed FTA & CA; STC gone (CA)

PowVu FTA, replaces PAS-2 svc

Difficult because of CCTV cross pole

PowVu CA

PowerVu; some audio FTA

PowerVu; Asian MUX; new parameters Nov '03

8 **MTV China FTA V289, A290**; rest CA

PowVu CA, WIN, ABC NT, SBS; status unknown

Test - may not stay permanently

Temp FTA; subs Aust 011-800-2270-0722

Occ FTA (Chile +); BIG power reduction Nov 03

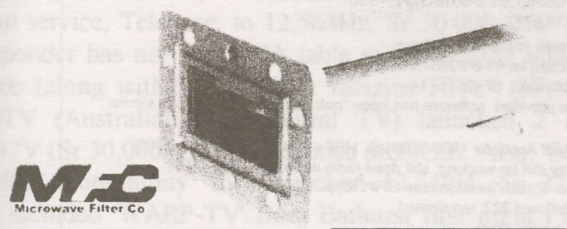
BBC World moved here January 2005

Irdeto 2 CA - subscriptions avail; Strong Tech

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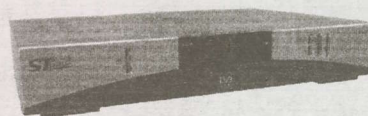
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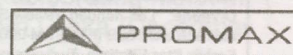
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D-ST7 2.3Mtr Heavy Duty

D-ST10 3.0Mtr Heavy Duty

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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(900)
	Feeds	3868/1182H	1	2/3	6(620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(620)/7(498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	Korean Bgt	3771/1379H	1	3/4	6(510)
1904/174E	IPSTAR	12.619H	1	2/3	25(220)
	Tests-NZ beam	12.646H	1	3/4	22(418)
	RFO Poly	4027/1123R	1TV	3/4	4(566)
1701/180E	TNTV	11.060&11.514V	9	3/4	30(000)
	TVRFO	11.136V, 11.174V	6+TV, 3+ radio	3/4	23(149)
	Canal+ Sat	11.610H	16TV, 1 radio	3/4	30(000)
	PBS	12.648HH	16TV possible	3/4	28(066)
	TVNZ/BBC	4186/964RHC	1	3/4	5(632)
	TVNZ	4178/972RHC	1	3/4	5(632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(632)
	Fiji Sky Pacific	4095/1055LHC	6TV + future radio	3/4	16(505)
	Fiji Sky Pacific	4055/1095LHC	6TV + future radio	3/4	16(505)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(632)
	TVNZ feeds	4044/1106R	1	3/4	5(632)
	NZ Prime TV	4024/1126L	1	2/3	6(876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(000)
	Ioarana	3772/1378L	1	3/4	4(566)
	NASA TV	3854/1296R	1 TV	3/4	2(000)
	TVNZ	3846/1304R	1	3/4	5(632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(111)
	USA feeds	3749/1401R	4?	?	26(400)
NSS-S/177W	Pacific JP Data	3745/1405R	none-date	3/4	44(995)
	BYU-TV	4185/965R	1TV, 20+ audio	1/2	6(525)
	IPSTAR Tests	12.691V	9+ TV	5/6	17(600)

Receivers and Errata
New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863.Sr.100
FTA-tyt NTSC-occ sport, live Shuttle
PowVu CA + FTA (ABC-A-P 'til 'early' 2005)
was 4148Vt; some FTA
Korean MUX, reload 12-04; new Sr
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
FTA 11.136 Tahitian beam, 11.174 west beam, 12/04
I+ FTA, MediaGd "2"; + 10.975 weaker
Testing Fiji region pay-TV (MDS) package (Oct '04)
DMV/NL early vers. occ feeds, typ ca
DMV/NL early vers. occ feeds, typ ca
'DTS Direct to Sailors; audio previously FTA - gone
DMV/NL early vers. occ feeds, typically ca
Nagravision CA (: Feb 1, 2005) New PIDS
All now (including Fiji 1) CA; 7 Feb, 2005)
DMV/NL early vers. occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
New PIDs Dec 03 very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
24/7 live NASA - West Hemi beam (difficult!)
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment, top Sr check
Global beam - requires sizeable dish
CA Tests - Taiwan TV; data coming?? (NZ beam)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept '99. AV-COMM P/L. 61-2-9939-4377.

AV-COMM Tiny Tot. FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.

AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.

Coship 3188C. Review SF#107. Blind search FTA rcvr, works well. Available from Satlink NZ www.satlinknz.co.nz (ONLY KNOWN DISTRIBUTOR IN WORLD)

Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>

eMTECH eM-100B (FTA), eM-200B (FTA + Cbx2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)

Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 CI. Review SF#119. www.aDigitalLife.com

Humax ICR1 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04. SF#76

Humax ICR1 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix Technologies, and Satmax (<http://www.satmax.ws>)

ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.

MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777

MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14

Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced: Sept 18 (2003) "drop-dead" day; all were to have been "turned off" on that date (in fact, those with V1.13 CAMs may still be working; still does radio including CA. not TV)

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15)

Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below)- 222; terminated

Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).

PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigitalLife.com

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.

SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com

SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).

Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superceded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin

Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above), review SF#103.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above

UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust, Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks

Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447; long term teletext problems (loses TT)

"X" Digital. When modified with "aftermarket" Internet software, does Aurora and other V-1 CA without card; review SF#119. Strong Technologies (61-3-8795-7990).

Accessories:

Aurora smart cards. MYCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

PowerVu (Pacific) repair service: Cable & Sat Svcs. Darius West. 61-2-9792-1421 (Email darius@cases.net.au)

WITH THE OBSERVERS

AT PRESS DEADLINE

End of an era: Last Analogue As3S service, Azio TV 3640H, has shut down (all remaining are digital). Beijing TV has appeared 4055V, Sr 4.760, 3/4 (V308/A256), FTA, As3S. "T" Channel new Thaicom 3, 3625V, FTA. Solar outage now past.

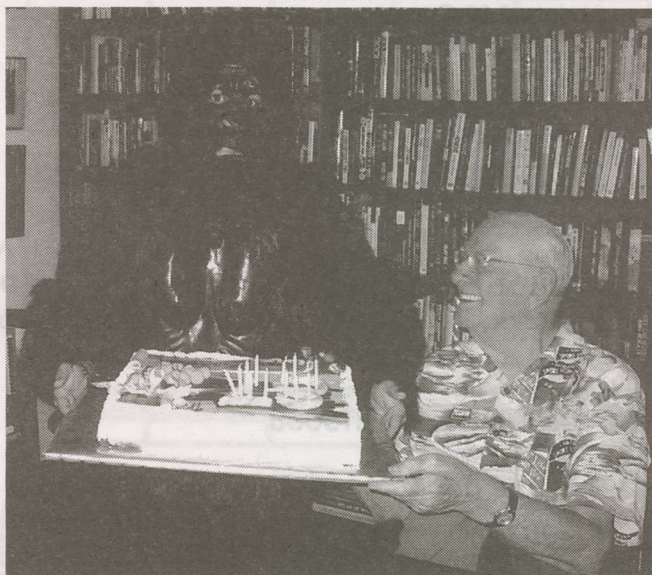
AsiaSat 2/100.5E: "BYU-TV (Utah, USA Mormon) appears on 3767Vt, Sr 6.525, 1/2, apparently a test to see if this increases their reach into Asia." (Bill Richards, SA) "Indian Aaj-TV has launched SCPC on 3750Vt, Sr 2.820, 3/4 with VPID 33, APID 36, FTA." (Peter)

AsiaSat 3S/105.5E: "Azio TV, analogue 3640Hz analogue, also now parallel 3716Hz, Sr 7.000, 3/4 (VPID 166, APID 104)." (Susan) "CETV, mainstay analogue 3680Hz, has been testing DVB-S, FTA, same frequency with Sr 26.670, 3/4 (VPID 33, APID 32)." (KK) (Editor's note: With such a sizeable symbol rate, more programming planned here)

NSS-5/177W: "BYU-TV (Utah, Mormon) has also appeared on 4185RHC, Sr 6.525, global beam." (Bill Richards, SA)

Optus B3/152E: "Three Russian channels, testing through 12.640Hz, disappeared March 31, replaced by a test card." (Pedro) "Mockba TV, InterPlus TV, Channel One Russian (channels 42-44 within UBI) are now gone (1 April), replaced with test cards or a video promotion loop." (IF, Qld.) "Apparently some firms in Europe, Middle East, that feed programming to TARBS, are not aware of the bankruptcy. Saw promo message on UBI ch 35 (Balkan Channel) promoting 'TARBS - Europe' and launch of HYAT (Macedonia) late in March." (AI, NSW) "AMTV, the long promoted but never started 'Australian Multicultural TV' channel dreamt up by Mike Boulos, has gone from a much too long repeating video promo to a static 'AMTV' logo display." (NS, Victoria) "Globecast appears to have added an Italian service, Telepace, to 12.563Hz, Sr 30.000, 2/3. This transponder has not had a CA table so for at least now this service (along with TVN, TVK) remains FTA." (IF, Qld.) "AMTV (Australian Multicultural TV) launched 2 April 12.657V (Sr 30.000, 2/3); some video problems. Also, 'SCTV' (Satellite Community TV) launched 12.640H (Sr 22.500, 3/4), included 'WARP-TV' from Bathurst first night (V519, A647)." (NS, NSW)

Optus C1/156E: "All programming on 12.288Vt, from ABC, are now CA; previously were FTA (including ABC-2)." (DM, NSW) "Previous Aurora transponder, 12.720V, has been loaded with NIT (Sr 27.800, 3/4) as a part of the Foxtel/Austar network. Channels initially loaded as V1 through V11, carrying NDS and MCrypt CA; TVSN was the only FTA remaining as of March 24." (IF, Qld.) "Aurora Community Channel, largely backed it appears by Catholic Church, 12.638Hz, is now CA." (DS) (Editor's note: There is



SatFACTS fan Sir Arthur C. Clarke, 'Godfather' of the geostationary satellite system, celebrating his 87th birthday at home in Colombo, Sri Lanka (December 16, 2004). "My favourite primate", he writes, "is (actually) Melinda Ekanayake, dressed for the birthday occasion".

Asia/Pacific Region Clarke Orbit Launches

April 12: ApStar 6 to 134E ('C' to S. Pacific - 34>37 dBw Australia, NZ; 32 dBw Fiji, Tonga)

May 17: Telekom 2 to 118E (footprints not available)
June 24: AM3 to 140E (16C, 12 Ku; C-band primarily intended north looking only; Ku capable spot beams including Australia [or NZ, but not together] to 53 dBw.

something ironic about a socially conscious church allowing themselves to be talked into pay-to-watch-us format.)

Palapa C2/113E: "Unknown religious feed, 3773Hz, Sr 5.000, 3/4 (V PID 33, APID 36) 27 March." (Bill Richards, SA). "Kabelvision MUX 3580Hz has been off/on". (NickZ)

Telstar 18/138E: The S-Sky MUXes on 3460Vt and 3660Vt, new symbol rates; 30,000." (Arnold) "3460Vt and 3660Vt have up to 11 programme channels, often FTA (but not always) including 'Hollywood Movies (3460)." (Vickie)

Soapbox: "A thought about the selling off of spectrum space by government(s). 'In the beginning there was

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady.

Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you.

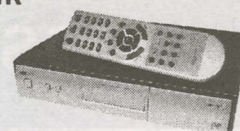
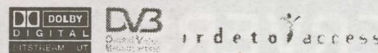
Deadline for May 15th issue: May 4th by mail or 5PM NZT May 15th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

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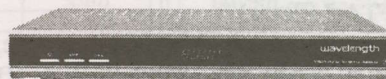
Compact embedded IrDeto
Satellite receiver with 1 card slot.

wavelength DSR-103



FTA Compact Digital **Satellite** Receiver
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wavelength DTR-279

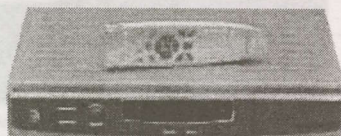


FTA Compact Digital **Terrestrial** Receiver
SD Standard Definition Digital Terrestrial Receiver with
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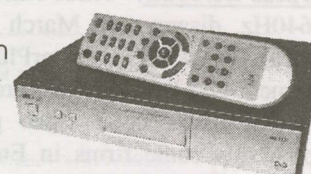
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Homecast Australia site for terrestrial receivers is at <http://www.homecast.net.au>

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spectrum. It was good and it roamed the Land as a free spirit. Millions of years later there were governments. The governments assumed the right to plan the spectrum. It was good and order was established. Demand for spectrum increased. The government (then) assumed *ownership* of the spectrum and began selling pieces to the highest bidder. It was bad because interference was spread across parts of the spectrum. The government(s) also decided on new transmission technologies to deliver TV to the people of the land. It was bad because all of the people of the land had to throw out their existing equipment and purchase new equipment to continue to receive TV." (Geoff, via Internet) "New Zealand's late-to-post would-be satellite operator, NZLSAT requesting 158E, for the following downlink bands: (1) 3.7 - 4.2, (2) 7.25-7.75 (a military use group), 10.95-11.2, 11.4-11.7, 12.2-12.5, 12.5-12.75 and 19.7-20.2 (all GHz)." (Edwin) "Email query to Fiji's Sky Pacific asked question, 'SatFACTS Magazine reported your service to be available throughout Pacific.' Their response was, 'Sky Pacific is only available to Fiji' (Leotina Ratu Jone, Sky Customer Team Leader as irjone@fijitv.com.fj). Is this true?" (Jim Ruhe, Solomon Islands) (Editor's response: Well, we know it has become available in Samoa [see p. 4, here] but we also understand that 'roll-out' in other island groups will be over time and on a schedule dictated by management as they deal with hardware supply and programming permission questions. Our view? Eventually, yes, *even in Solomons.*) "I understood that MPEG-4 is not as good (quality) as MPEG-2, being more robust perhaps but not having the ability to create high quality images - if we are using MPEG-2 as a benchmark." (NS, NSW) "With reference to Sky Pacific/Fiji's concerns about copyright violation if they allow their programming to serve subscribers in, say, New Zealand. On the UBI Mux, programme channel 'obn' (their channel 31), I have seen promos for 'The Jerry Springer Show' (available on Net 10 and Fox 8), 'South Park' (available on SBS and Comedy Channel) - even Sesame Street with English soundtrack and Bulgarian sub-titles! In mid-March, 'obn' ran a 'movie marathon' including a number of recent US films. So, how does UBI/'obn' get away with releasing USA programming into Australia when Fiji cannot release it into New Zealand, or the Solomon Islands?" (AI, NSW) "TVNZ searching for receiver supplier(s): 'Secret document' lists criteria for FTA (only) capable STB including some not so common - i.e., 8-day EPG, Open TV 1.1, MHP, MHEG-5 and more. Strange part - they are not the buyer, want distributor-supplier to agree to 10,000 per annum volume in apparent exchange for TVNZ declaring a specific model as 'official receiver' and promoting same through marketplace (and one assumes heavy on-the-air promotion). Deadline for submission was 1 April." (Distributor/ importer, Australia) "Falungong, the dissident Chinese group that breaks into AsiaSat 3S (and other) China-beam programming to promote their cause (they are claiming to be a religious sect but the Chinese government considers them to be outlaw anarchists), has once again attacked the satellite feeds (March 24, 9:34PM CCT), this time busting over the top of six Chinese beamed services. Falungong has variously been suspected of being in Taiwan, Singapore and Macau but in fact the authorities with the present generation of satellites have no technical way to trace their point of origin. It may all seem like 'fun and games' but the entire matter is considered a serious threat by

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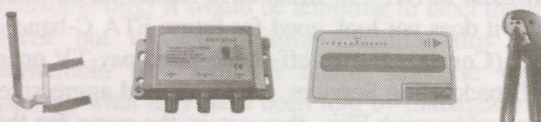
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the Chinese government." (Howard T, Taiwan) "He is madder and hell and not going to take it anymore. Sam Kimery of Tulsa, Oklahoma has created a cable TV 'trap' which he sells for US\$8.95, designed to remove Fox News Channel from TV sets. Death threats from Fox News fans have followed!" (Emily, USA) "Global Gate Media seems to be yet one more Boulos invention, attempting to sell 'banner advertising' scrolling across the screen on various ethnic channels he is importing from the Middle East and Europe. I seriously doubt ethnic viewers will appreciate having their screen divided up into Boulos sold advertising and programming material!" (IF, Qld) "Globecast technicians March 27th neglected to turn on the CA portion of the SA machinery while transmitting an 'IBF Flyweight Boxing Championship' feed (12.460Hz, Sr 6.666, 3/4) from Homebush/Sydney. The same event, CA, was on offer through Foxtel and Austar PPV. Sloppy." (AI, NSW) "Add this to you 'Digital-What?' list of obscure relationships. Eveready is now selling a new type of battery which they label 'Digital Battery'! If there is any electrical/electronic product that would be less digital than others, the battery would have to head that list. But it will sell more batteries, no doubt!" (HE, NSW) "As advanced as the UK may claim to be (with digital technology), in fact it is the Scandinavians who actually lead the world in percentage of home takeup. Sweden, Denmark and Norway rank at the top of the list but the 20,000 person survey taken unfortunately blends digital mobile fone technology with TV and Internet and it is difficult to determine whether TV (alone) is in fact more used in the digital format in these three countries." (Jupiter) "3.5 GHz wireless in NZ - 46 firms have registered an interest in licenses - it does not look good for future FTA C-band in this country." (Corrie) "UBI's off-shore based pay-TV operation, Pacific Broadcasting Services, has conducted aggressive press campaign addressing Fiji; they are in the game for the long haul and will not be offset by Fiji TV's satellite package. PBS's parent, UBI's Mike Boulos, appeared in Fiji mid-March and according to local press reports, made 'outrageous statements' concerning virtually everything but the truth". (FT) "Off air C-band interference in Tasmania solved (if not resolved). ACA has authorised trio of 1-watt Mt Barrow sites on 3.955, 3.897 and 3.839 GHz - bad news and tough luck for those attempting to receive AsiaSat 2 (or much of anything else) within LOS of the mountain. Trap time for Tasmania!" (Brian Watson) "Mirchee Digital is using Auckland Sky Tower to transmit up to 10 ethnic programming channels, terrestrial, on 12.338 GHz, Vt, Sr 27.500; TVNZ's Waitarua site is to be added soon". (Trevor) "Australian Woolworths food chain, offering Kross brand DVB-T STB for A\$79. The

end of the world is near!" (IF, Qld.) "For A\$499, folks can purchase a Tewlon (brand) DVD recorder equipped with 80 Gb hard drive from Aldi. That seems like a better buy than Foxtel's 'IQ' offer." (ER, NSW) "Another NZ importer of Digital Satellite receivers - ASoft Limited (www.ascot.co.nz/kaon/". (Victor) "HDMI? How many people realise that this STB to digital input interface has only one REAL purpose - to allow programmers to control copyright/TV stream (file) sharing. Yes, it allows HDTV connection but only on terms demanded by the copyright owners - you will be denied access to recording (or limited by software to single recording), or transferring file to another such as through broadband Internet". (Gregory, California) "Canada, long the last bastion of 'freely available Internet access without government controls' is closing the loophole. Government is rewriting its copyright laws, following the guidelines of the USA sponsored World Intellectual Property Organisation Treaties. Canadians have been downloading P2P networks without regard to national laws; when the new rules go into effect, they will, like much of the rest of the world, become traceable and chargeable for downloading material for which they do not have copyright clearance." (Paul H, Montreal) "I believe you will find that DVB-S already has a potential copyright inhibitor included. DVB2000 has the ability to read a data bit that translates to. 'Copyright is set' or 'No copyright'. I doubt very many (if any) satellite broadcasters are presently utilising this 'bit' but it remains there for some future implementation." (IF, Qld.)

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Op Ed: One person's opinion

Analogue is our digital 'present'

Foxtel recently launched their new 'IQ' PVR recording device and indications are it has been a modest if not runaway success in the marketplace. I've seen many web postings complaining that after paying \$399 to obtain the device and agreeing to pay a monthly fee to 'use' the item, the consumer does not actually own it. Nor am I convinced their \$399 is not a bargain. PVR pricing is headed for a quick drop of large proportions - after all, the US gadget that launched this revolution (TiVO) is barely US\$100 these days. Give us, say, another 24 months, and today's TiVO/PVR devices will be selling for under A\$100 as well. Is the consumer not better off NOT owning something that will depreciate in value faster than a new Ford driven off the dealer lot for the first time? And made an antique by new versions that in two years will make us snicker when recalling the original 'IQ' offering? In fact, A\$399 is an 'early technology adopter fee' designed to cover Foxtel's bottom line cost if the device should end up being destroyed while in the hands of a consumer. Nothing more, nor less.

With this new 'IQ' now attracting attention, I took a hard look at the satellite decoders available on the market and pondered, 'How many hobbyist types, similar to myself, have their sat box connected to their home entertainment system'?

The objective with a Home Entertainment Centre should include great sound, and a clear 'digital' picture. For the sound, do you use the RCA 30s designed sockets for left and right, or, the optical (Toslink) or coax (SPDIF) links? Most entertainment-class IRDs will allow one or both of these connections, and so does Foxtel.

As nice as multi-channel 'digital sound' can be, very few consumers will accept great sound and a shoddy picture - the vision comes first (otherwise we might be calling TV audiovision!). Once again, there will be RCA sockets for 'composite' and some will offer S-VHS. The difference here is in line count with S-VHS capable of 430 lines while composite sockets do well to reach 250. Digital is, first of all, all about significantly improved (video) signal to noise ratio as delivered on the screen - a PAL format VCR trundles along in the region of 43-45 dB while digital has the capacity, at least at the demodulator stage, of 57 dB - nearly a third (33%) better. But signal to noise is only *part* of the equation - how many lines of definition (how many pixels of information) is the true test of "Wow! Look at that!!" viewer responses. Bandwidth, more lines in the image, is best done with component in the analogue world; in the digital world,

there is DVI (Digital Video Interface) and HDMI (High Definition Multimedia Interface). Is there a component option with the IQ? Sorry. But then not very many receivers have component output capability. And as for DVI or HDMI, seemingly endless 'standards wars' continue to grind away between the hardware designers/manufacturers and the software (movie, programme rights) opposing camps. HDMI, by the way, is dressed up as a 'solution' for digital out-digital in interfacing when in fact it is really a wolf dressed in sheep's clothing. What it is *really* all about is the built-in ability to stop you from recording a particular (digital) programme, sharing it inside your own home on a wired system, or heaven forbid - on Internet! They claim it answers the digital-to-digital interface dilemma. It does, but the rules will dismay many ("What the bloody hell - this thing says I can't record this movie on my IQ!").

So Home Entertainment Centre systems, built around 42" (or larger) Plasma screens and 5.1 channel sound, are something less than portrayed. Where it counts, the video portion and the ability to archive programming or make a DVD to take to a friend's house, they remain analogue. And not very good analogue at that. The present hardware allows some of this to happen, but not in a true digital format. It is digital to a point in the processing chain, and then analogue; sort of like filling up your Super Charged dragster with diesel fuel.

Is any of this being explained to consumers who are being enticed into showrooms by the lure of 16:9 'widescreen' images and the magic phrase, 'digital'? Worse yet, what percentage of sales staff at a consumer electronics store even understand this? It would be tempting to label them 'liars and thieves' but if their training excluded this vital bit of information, how can we blame someone who is only repeating what they have been told by management, or, read in slick Sony (etc.) sales brochures?

Yes, there are quasi-attempts at 'working around' this barrier. Line doubling, 100 hertz displays are one such clever bit of trickery. A simplistic but accurate example. You can purchase a litre of milk for say \$2. Or you can buy the same litre of milk in a 2 litre container, topped up with water, for \$3. Do you walk out of the shop with twice as much milk for 50% more money? Line doubling is nothing more than taking the original line count (such as 576) and making each line appear twice (1152 lines) on the display. Twice as much 'milk' for an additional 50% increase in cost!

HDTV, when, if, it is allowed to be in a consumer friendly format, may also create 1152 lines of video - but each of these will replicate an original 1152 lines originating at the programme source, on a DVD, or from your digital camcorder. It will be 1152 out, 1152 in, 1152 on display, not 576 out, 576 in, 1152 on the display.

Obviously, although digital via satellite is now ten years old, these remain early (pioneering) days. There is much work to be done, numerous conflicts between programmers and hardware designers to work out, before the display on your wall will in fact be 'digital out, digital in, digital display'. For now, we have half of our industry in analogue and at least half in digital although where the two sides meet there is more of a blurred image than a distinct line. We are pretending this is not so, or ignoring the continued importance of analogue during this transition phase. We'd better wake up and smell the analogue; it's still there.

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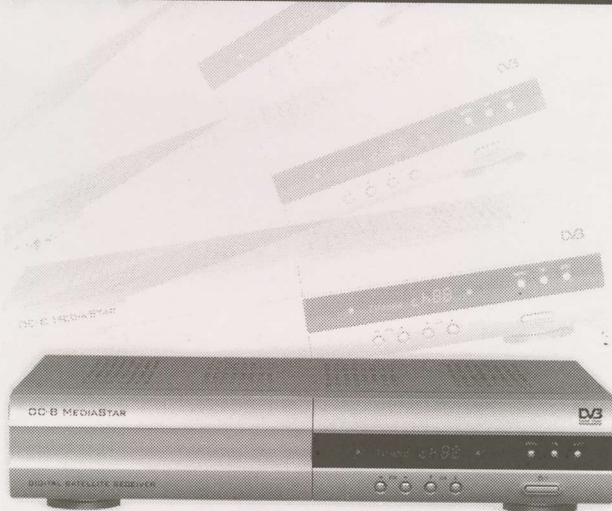
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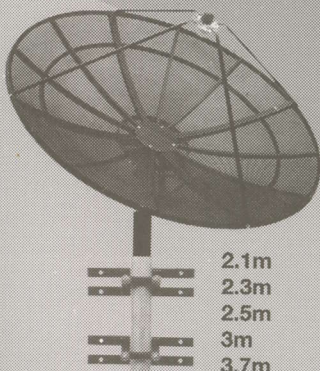
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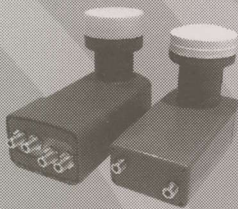


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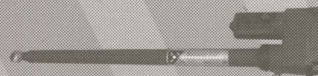


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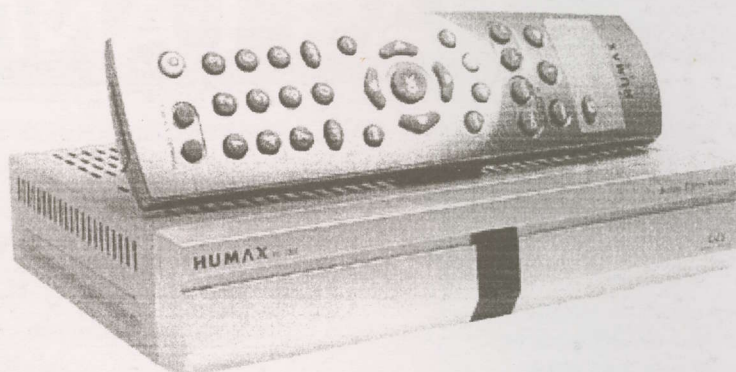
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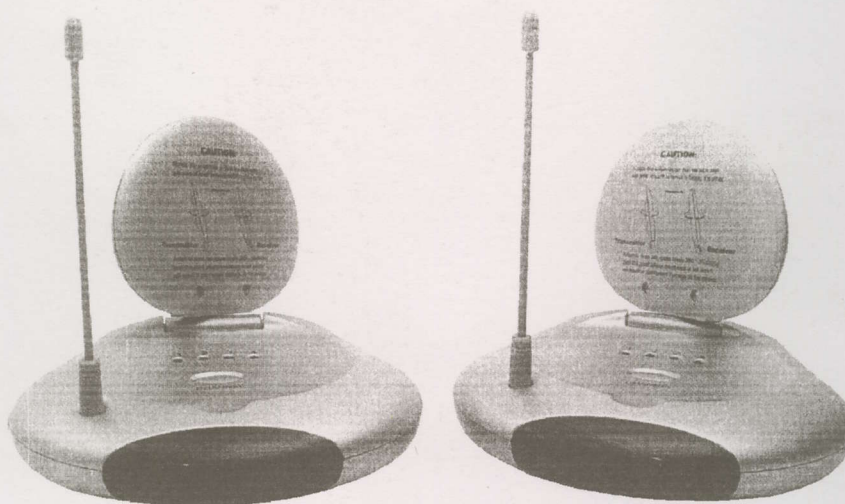


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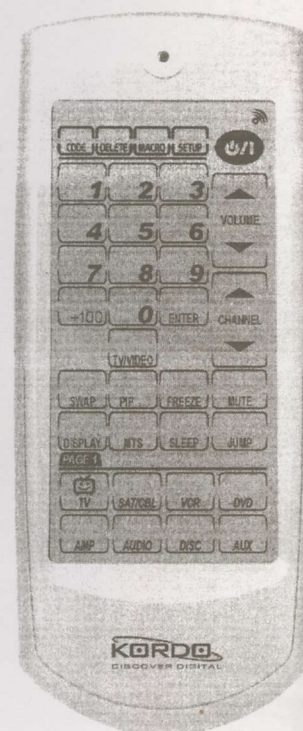
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